WESTERN GAS

Robertshaw SATURDAY EVENING POST ADVERTISING is selling the gas ranges equipped with ROBERTSHAW OVEN-HEAT-CONTROL

THIS LITTLE ROBOT DIAL WATCHES OVER YOUR COOKING
while you run out to play
YOU can walk right out of the house as soon as you put roasts and baking things into the oven—you can come back and find them done to a turn, and done at a saving in gas—you can enjoy hours of kitchen freedom you never knew were yours—
That is, when you cook with a modern range equipped with a Robertshaw oven-heat-control dial!
This robot dial measures out just the right amount of heat needed to make each dish perfect, and keeps it there for the cooking time shown in every up-to-date recipe book.
Turn to modern cookery—but when you look at the new gas ranges, be sure the one you select is equipped with a Robertshaw dial. Then you will know it offers all the conveniences of the modern range.
ROBERTSHAW THERMOSTAT COMPANY
YOUNGWOOD, PA.
ROBERTSHAW
I'M THE ROBERTSHAW OVEN-HEAT-CONTROL ROBOT DIAL
SEE REVERSE SIDE FOR PRICE OF THIS MODERN GAS RANGE

Here's why

This — Robertshaw Robot figure brings to life the Robertshaw oven-heat-control dial. *Women will never forget it!*

This — straight-to-the-point heading tells why Robertshaw oven-heat-control makes cooking easier. *Women will give it keen attention!*

This — sells the joys of the modern gas range—creates discontent with old-stove cooking. *Women will read it word for word!*

This — shows millions of prospects what the dial looks like when it's on your range. *Women will know where to find it!*

This — Robot tag carries the Robertshaw selling story right up to the point of sale. Hang it on all Robertshaw-equipped ranges displayed and identify them to women who want to buy. *Supplied free upon request.*

Robertshaw sustained advertising plus continuous cooking school demonstrations (more than 300 scheduled this year throughout the country) combine to make Robertshaw-equipped ranges easy to sell.

This Saturday Evening Post advertising is running now. More ads, as effective as this first one, are on the way.

ROBERTSHAW
OVEN-HEAT-CONTROL
ROBERTSHAW THERMOSTAT COMPANY, Youngwood, Pa.

Every FROZEN CURB COCK IS A LIABILITY

REPLACE THE OBSOLETE

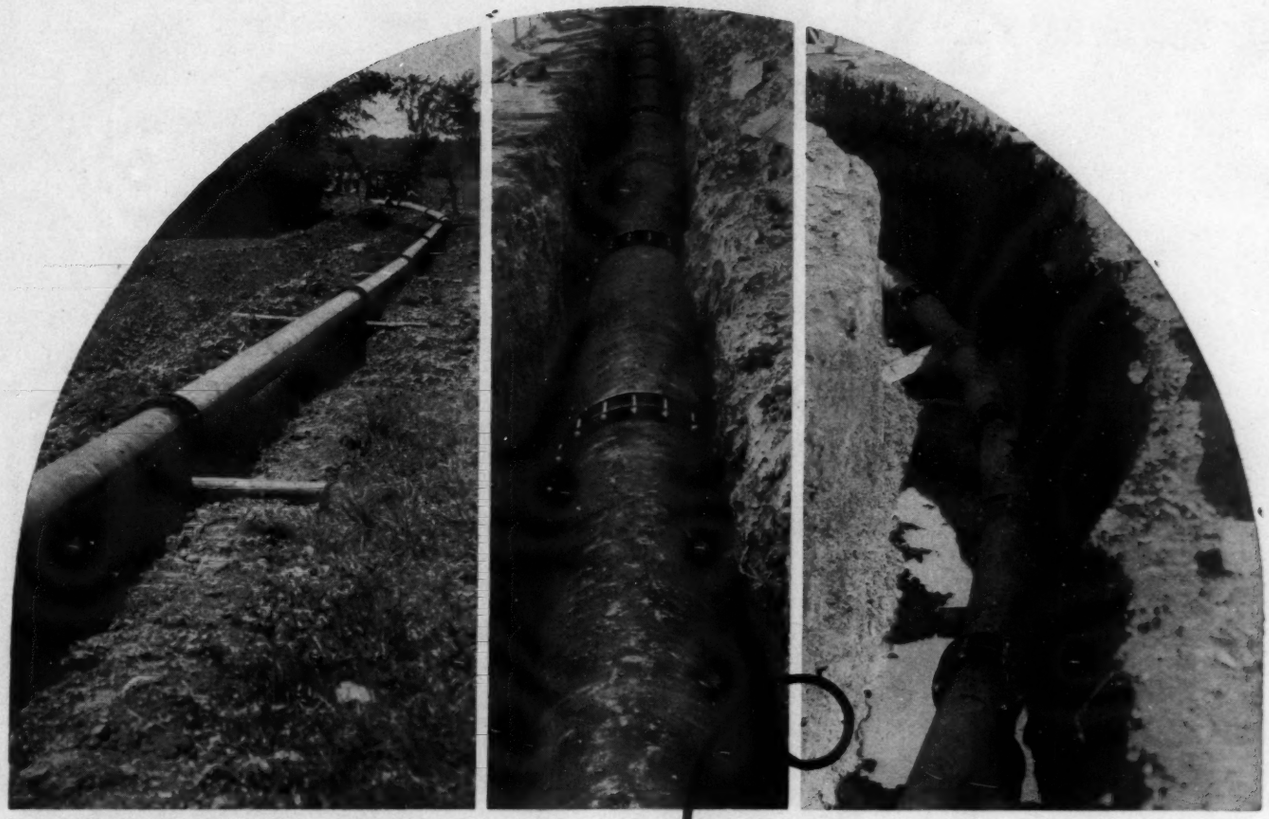
WITH *Nordstrom Curb Service Valves*

FROZEN tight, after years of inactive service, a curb cock is a liability. But by installing Nordstrom Curb Service Valves, instant shut-off is certain. After years of inactive use these Valves will operate as easily as if turned every day. No need to "use a hammer and monkey wrench" to open or close. They eliminate service cock renewal expense. Their length of useful life is unlimited.

Patented "Sealdport" lubrication.
No field adjustment needed.
Gas pressure to 50-lb.
Lock-nut ever-tight.
Economically priced.
Instant shut-off.
Non-freezing.
Non-sticking.
Positive seal.

Progressive gas companies are rapidly adopting these trouble-free Valves for replacements.

MERCO NORDSTROM VALVE CO. *A Subsidiary of* **PITTSBURGH EQUITABLE METER CO.**
Main Offices: Pittsburgh, Pa. *Branch Offices:* New York City, Buffalo, Philadelphia, Columbia, Memphis, Atlanta, Chicago, Kansas City, Tulsa, Houston, Los Angeles, and Oakland, California

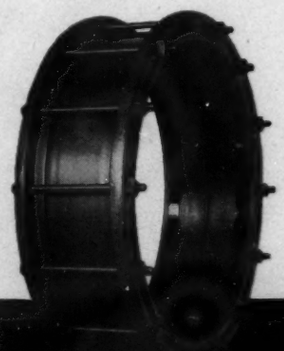


STRAIGHT OR *Curved*

—IT'S ALL THE SAME TO DRESSER COUPLINGS

Because pipe lines run neither straight nor level, there is but one logical type of pipe joint: the Dresser *flexible* Coupling—a joint that adjusts the line to the contour of the ground and the curvature of the route by permitting horizontal and vertical deflections of the pipe.

This feature of Dresser Couplings (called the "Floating Grip") means that the major portion of a pipe line can be built with straight sections of pipe and standard Couplings. It also means the elimination of many expensive factory "specials" and field bends, the need for detailed survey of the right-of-way, and careful grading of the ditch. Construction is simplified right down the line. Permanent tightness is unaffected in any way. For further details ask for Folder No. 355-G.



S. R. DRESSER MANUFACTURING COMPANY
BRADFORD · PENNSYLVANIA
In Canada: Dresser Manufacturing Co., Limited, 32 Front Street, West, Toronto, Ontario

DRESSER COUPLINGS

ADVERTISERS' INDEX

The American Brass Company 37
American Cast Iron Pipe Co. 38
American Meter Company 10
American Stove Co. 35
Auditorium Hotel 62

The Barber Gas Burner Co. 59
Barco Manufacturing Company —
H. R. Basford Company 40
The Bristol Company 61

The Cast Iron Pipe Research Ass'n. 3
The Chaplin-Fulton Mfg. Company 44
Connelly Iron Sponge & Governor Co. 46
The Cooper-Bessemer Corporation 58

Daniel Orifice Fitting Co. 42
Dearborn Chemical Company 60
Denver Fire Clay Co. —
Detroit-Michigan Stove Co. 7
S. R. Dresser Manufacturing Co. 1

Electrogas Furnace & Mfg. Co. 55
Electrolux Refrigerator Sales, Inc. —
Ensign Carburetor Company, Ltd. 45

Fluor Corporation, Ltd. 44
Fraser Furnace Company 40

General Ceramics Company 56
James Graham Manufacturing Co. 61
Greenlee Tool Co. 5

Handbook Butane-Propane Gases, 2nd Edition 54

Inland Manufacturing Company 45

Johnson Gas Appliance Co. 49

Kerotest Mfg. Co. 48

Merco Nordstrom Valve Co. 2nd Cover
Minneapolis-Honeywell Regulator Co. 40
Mueller Co. 48
L. J. Mueller Furnace Co. 58

The National-Superior Co. 63
National Tube Company —
Natural Gas Equipment Inc. 55
Nemec Combustion Engineers 56

Pacific Coast Gas Association, Inc. 50
Pacific Gas and Electric Company 53
Pacific Gas Radiator Company 41
Payne Furnace & Supply Co. 52
Peerless Manufacturing Corporation 54
Penn Electric Switch Co. 39
Pittsburgh Equitable Meter Co. 2nd Cover
Porcelain Enamel Institute, Inc. 3rd Cover
Pressed Steel Tank Company 49

Reliance Regulator Corp. 4
Republic Steel Corporation Back Cover
Reynolds Gas Regulator Co. 59
Robertshaw Thermostat Company Front Cover
Geo. D. Roper Corporation —

Safety Gas Main Stopper Co. 44
M. B. Skinner Company 8
Soboba Hot Springs 60
Spencer Thermostat Company 54
The Sprague Meter Company 57
Surface Combustion Corp. 6

The Texacone Company 64

United States Pipe and Foundry Co. 46

Ward Heater Co., Ltd. 62
Webster Engineering Co. 6
Welsbach Company 57
Worthington Pump and Machinery Corporation 33

WESTERN GAS

"Reg. U. S. Pat. Off."

Publication Office: 810 South Spring Street, Los Angeles, Calif.—Phone Michigan 1481
District Office: 1064 Peoples Gas Building, Chicago — Phone Harrison 8536

JAY JENKINS, Publisher GEORGE H. FINLEY, Editor CRAIG ESPY, Mid-Western Manager
W. G. RUSSELL, Field Representative

Contents for November, 1935

GUEST EDITORIAL: "How to Use the Breathing Spell" 9
By F. S. Wade

Review of the Month 11

House Heating Fundamentals . . . . *By B. A. Johnson* 12

Unit Costs in Utility Valuation . . . *By Judge R. D. Garver* 14

National Advertising in 1936 . . . . . *By Craig Espy* 15

Pilot Stability on House Heating Conversions 17
By Carl A. Nonnenmacher

Pipe Line Corrosion Problems on a Rocky Mountain System . . 18
By C. R. Hetzler and W. T. Nightingale

"Mystery Chef" Radio Program Assured for East 20

More Thought to the Sales Floor . . . *By George H. Finley* 21

Wyoming-Nebraska Pipe Line Nears Completion 23

Government in Business and the New Deal . *By E. F. McKay* 24

ABSTRACTS BY THE STAFF 26
Corrosion Resisting Materials for Gas Appliances 26
Analysis of Completed Leak Orders 26
Carbon Monoxide Indicator for Analysis of Combustion Products 27
Developing Commercial Baking Business 29

MEASUREMENT AND CONTROL 43
The Type E Robinson Orifice Fitting . *By Herbert S. Ingham* 43

BUTANE-PROPANE NEWS 47

WITH THE ASSOCIATIONS 51

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OFFICIAL PUBLICATION: Pacific Coast Gas Association; Southern California Meter Association

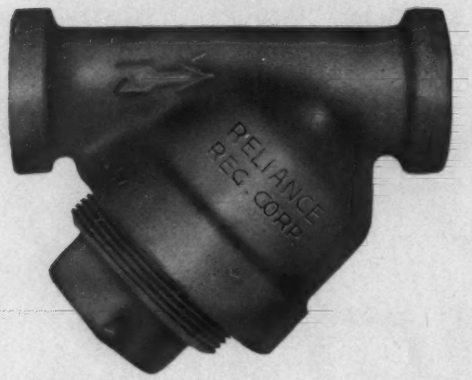
MEMBER: Audit Bureau of Circulations; Associated Business Papers, Inc.

America's oldest *gas main is cast iron—the standard material* for gas distribution mains

● This is how America's oldest gas main looks after more than a century of service. It was laid by the first gas company to be granted a franchise in America—The Gas Light Company of Baltimore. The present Company serving that city with a modern distribution system is the Consolidated Electric Light and Power Company of Baltimore, a direct descendant of the pioneer Company. With its heritage of unequalled long life, cast iron pipe of today with gas-tight mechanical joints offers the distribution engineer still better service. The Cast Iron Pipe Research Association, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Illinois.

NEWS

ABOUT KEEPING DUST FROM APPLIANCES



SMALL SIZE

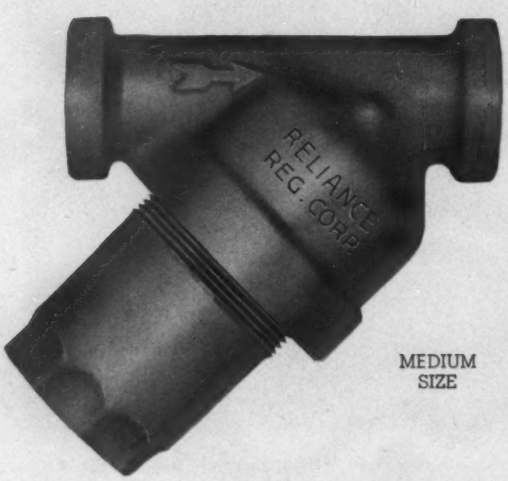
SERVICE LINES, METERS REGULATORS, PILOT LIGHTS

with RELIANCE TYPE "A" FILTERS

REGULATORS YOU CAN RELY ON
RELIANCE
SINCE 1910
TRADE MARK

Here are filters you can rely on! They may be used with individual appliances such as water heaters, ranges, furnaces, etc.; and are also recommended for house service lines in dust areas of the distribution system. These Reliance filters offer low priced, long-lived protection against accumulations of dust and therefore minimize operation and maintenance expense from this source.

Reliance Type A filters are made in three sizes, all with ¾" connections, all with standard body. Unions at one or both ends if desired. Filter elements therefore may be removed or changed from one size to another in a few minutes time without disconnecting body from the line.



MEDIUM SIZE

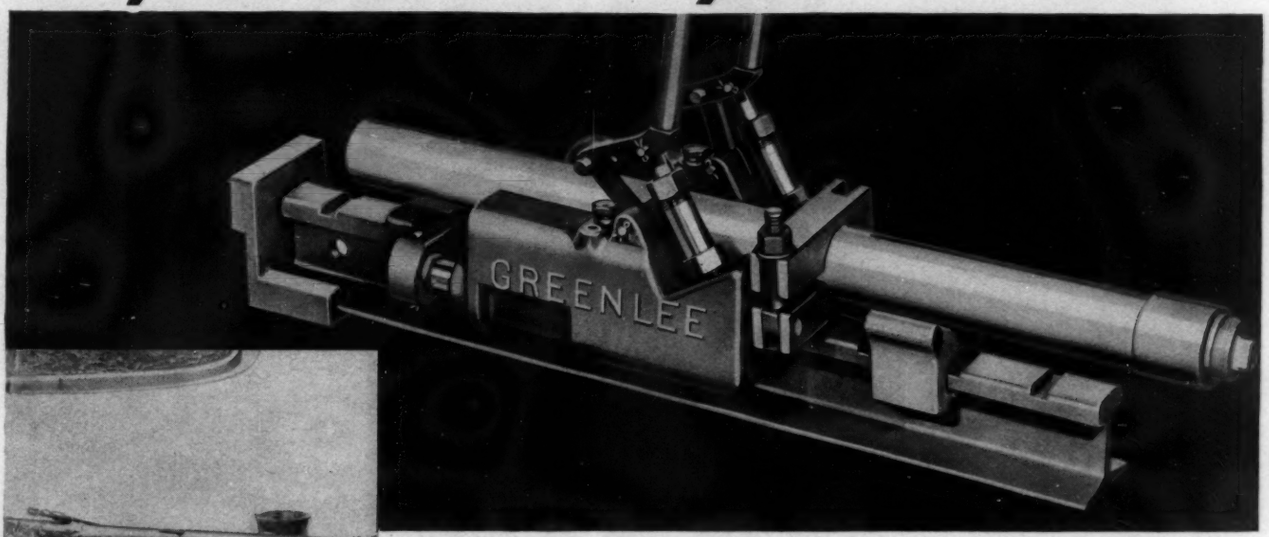
Reliance filter castings are made to withstand working pressures up to 150 pounds. Reliance filters may be installed vertically or horizontally with dust chamber hanging downward. The filter pad consists of special all-wool felt, unimpaired in efficiency by moisture in gas. Tests show minimum pressure drop in relation to its high capacity. Reliance Type "A" Filters are easy to install, and low in first cost.

Write for Bulletin No. 35

RELIANCE REGULATOR CORP.

1000 MERIDIAN AVE. • ALHAMBRA, CALIF.

YOU *can save* TIME *and* MONEY *with the* GREENLEE *Hydraulic Pipe Pusher*



Above is the Greenlee Hydraulic Pipe Pusher, set up for pushing pipe under a paved street. One man, standing in a comfortable position, can exert a pressure of 40,000 pounds on the pipe clamp, simply by pumping one handle in the slow-speed position. Eight speeds are provided for varying soil conditions, and various lengths of rails can be furnished.

This new pusher requires only one man to operate it, will exert a 40,000-pound pressure on the pipe clamp, and will make a push of from 4 to 7 feet (depending on length of rail used) with but one setting of the pipe clamp. No longer is it necessary to cut pavement or do extensive trenching, back-filling, tamping, etc. All of these things make it a time and labor-saving device that will often pay for itself on the first job.

The Greenlee Hydraulic Pipe Pusher is self-contained. It operates on a standard rail having milled notches. When the pipe has been pushed forward 4 inches, a pawl on the body drops into a notch to hold it while the oil pressure in the cylinders is released by depressing the handles. Springs within the body then bring the pistons forward to a new notch for their pawl, and the operation is repeated until the end of the rail is reached, when it is necessary to push the machine to the opposite end and reset the pipe clamp.

It will pay you to investigate this improved method of making underground installations. The coupon or a letter will bring complete details. No obligation on your part, of course.

GREENLEE TOOL CO. 1700 COLUMBIA AVE. ROCKFORD, ILLINOIS

Mail this coupon NOW

GREENLEE TOOL CO., 1700 Columbia Ave., Rockford, Ill. Date.....
Please send complete details on the Greenlee Hydraulic Pipe Pusher.

Company .....

Address .....

City..... State.....

By WG11-35

There is a DIFFERENCE

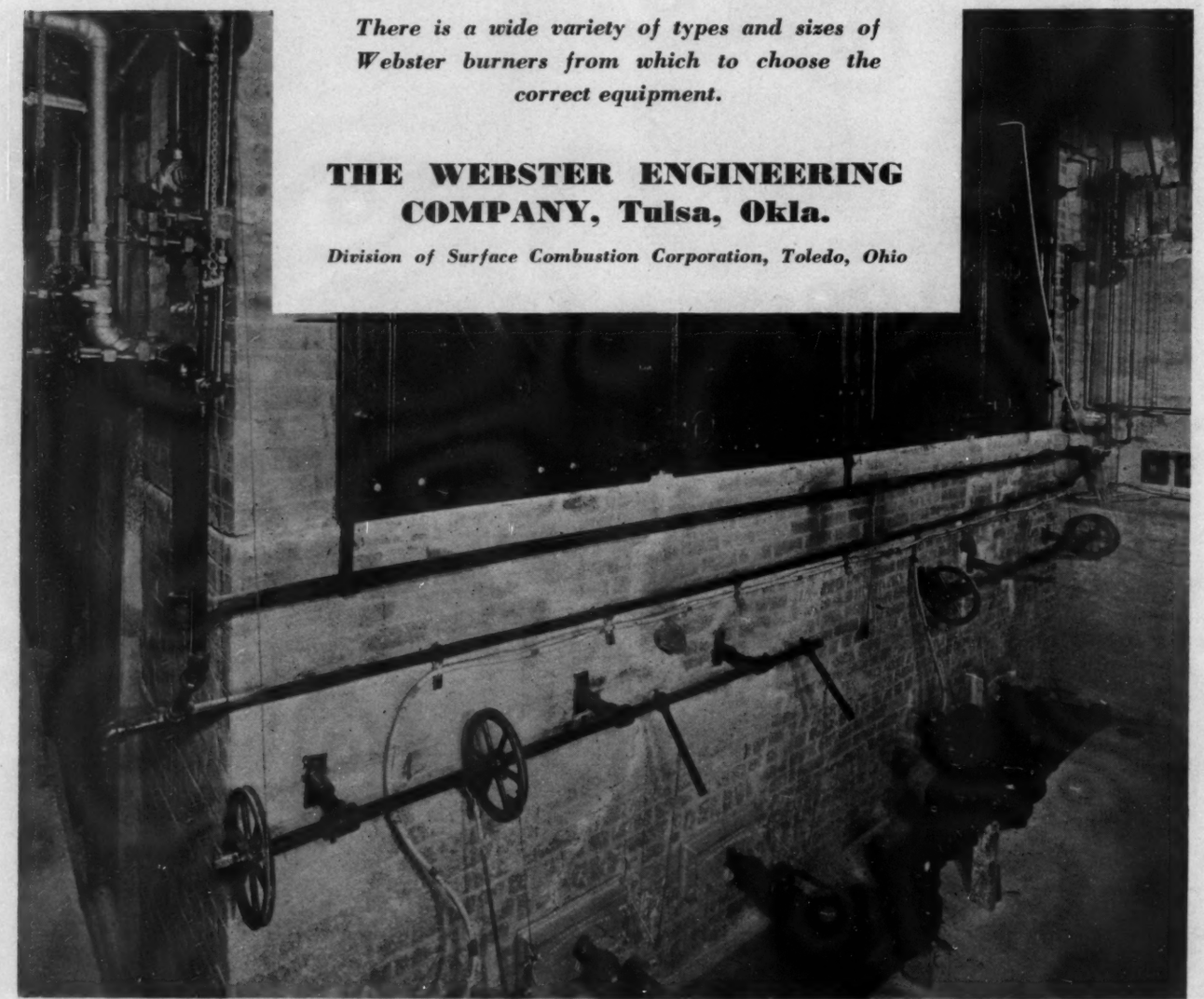
● *When purchasing gas burning equipment you naturally and logically want to choose the manufacturer who can serve you from a broad background of experience. You want no recommendations made on supposition.*

THE WEBSTER ENGINEERING COMPANY

QUALITY EFFICIENCY SERVICE *with* SPEED

The following example is a specific instance of the logical selection of *experience.* A specific instance of this is an installation in the Chicago area consisting of 4 - 500 Hp. and 7 - 450 Hp. boilers converted from oil to natural gas to develop 1200 B.Hp. on the 500 Hp. boilers and 1000 Hp. on the 450 Hp. boilers. Other burner manufacturers proposed lowering furnace floor and installing conventional type burners. This necessitated shutting down of boilers, resulting in a deficiency of steam. A Webster Survey recommended no change to furnace, utilizing part of present oil burners and equipment by using specially designed gas inserts at a cost of only *one-fourth* of competitive recommendation. Result, *gas contract signed quickly,* installation made by Webster without any change to furnace, no shut down, capacity guarantee met, efficiency guarantee met, *a satisfied customer and revenue* started for Gas Company quickly. Name of installation on request.

The Webster Engineering Company has the necessary *background of experience* to give you a positive guarantee of performance. This experience is based on thousands of installations of gas burning equipment in a wide variety of application. Give us your problems. You will benefit from our experience.



There is a wide variety of types and sizes of Webster burners from which to choose the correct equipment.

THE WEBSTER ENGINEERING COMPANY, Tulsa, Okla.

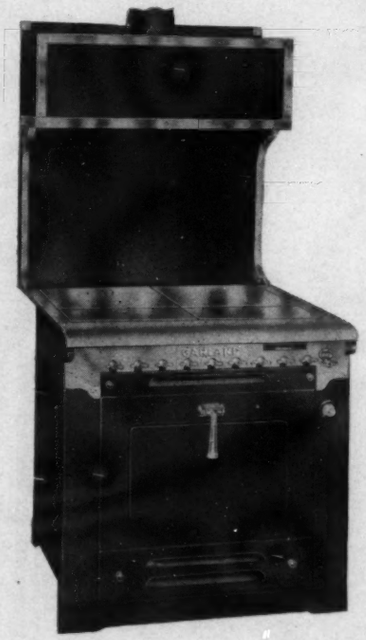
Division of Surface Combustion Corporation, Toledo, Ohio

ANNOUNCING

THE NEW 1936 LINE OF

GARLAND

Commercial Cooking Appliances



The New 1936

GARLAND

HEAVY DUTY GAS RANGE

In the 1936 Garland Range we believe we have produced the finest Heavy Duty equipment ever created. Maintaining all of the famous efficiency of the past, we enhance the 1936 model with smooth, Wellsville polished steel fronts; new, improved top burners; new super oven burner; improved, sanitary base; new valve handles; heavy, superior insulation; top and oven heat controls. The 1936 designing allows all appliances to fit snugly in battery form . . . no filler strips required; and many other outstanding refinements.

GAS IS THE IDEAL FUEL
and at its best when used with
Garland Heavy Duty Appliances.

The New 1936

GARLAND BROILER

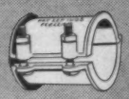
The new Garland Radiant Broiler brings you Garland's new effortless raising and lowering device; positive, even distribution of heat over entire 26" x 26" smokeless grid; improved, convenient hopper; upper roasting oven fully insulated and enamel lined. These are only a few of the new Garland Broiler superiorities.

Write:

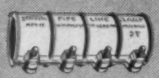
DETROIT-MICHIGAN STOVE CO.

Detroit, Michigan

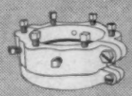
SKINNER



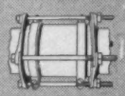
EMERGENCY PIPE CLAMP



PIPE LINE CLAMP

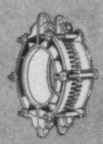


PIPE JOINT CLAMP

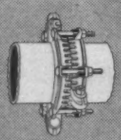


COLLAR LEAK CLAMP

BELL JOINT CLAMP



SPLIT COUPLING CLAMP

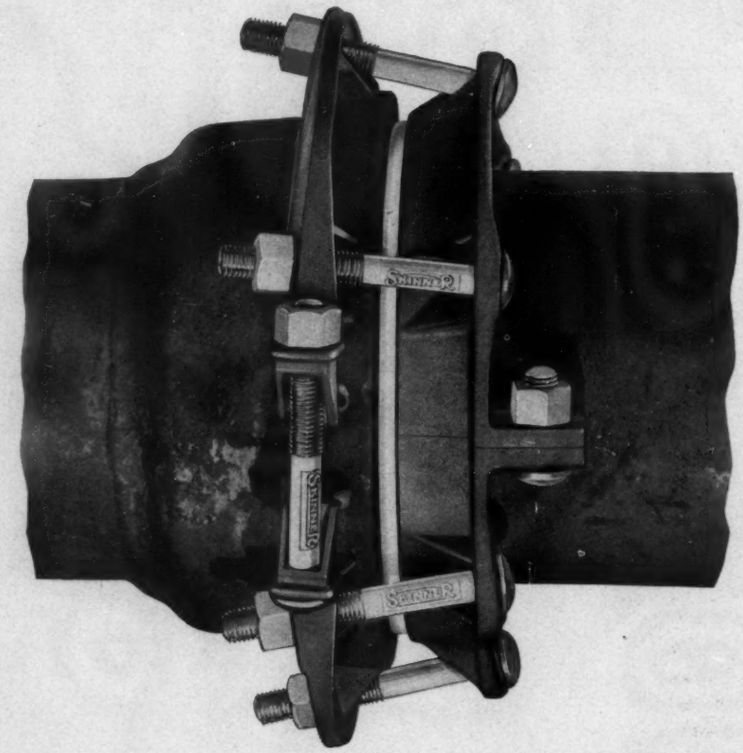


HIGH PRESSURE WELD CLAMP

SERVICE SADDLE

PRESSED STEEL ECONOMY CLAMP

A CLAMP FOR EVERY LEAK



A SEALED GASKET IS A PERMANENT GASKET!

● ONLY THE SKINNER BELL JOINT CLAMP gives you a soft rubber gasket completely sealed . . . (1) at the bell face by a Monel Metal band, (2) at the pipe by a hard vulcanized tip acting as a plug. Thus the pressure is permanently sealed in.

No rubber compound is immune to solvents, but SEALED rubber excludes them.

Thus the Skinner Bell Joint Clamp is an absolutely permanent repair. Its complete self-adjustability, for variation in pipe diameters, cuts down the number of clamps you have to carry in your store room. Its speedy one-man application cuts job costs . . . Its permanence is long range economy . . . *Write for prices.*

Have You Catalog No. 35?

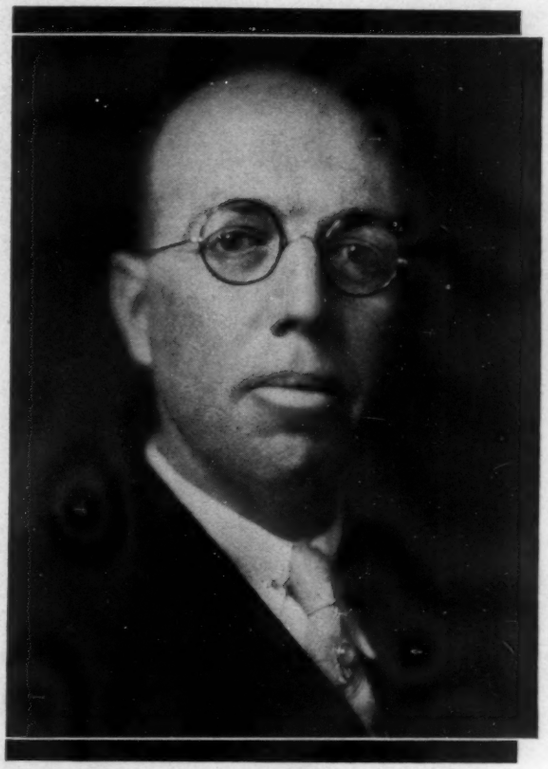
M. B. SKINNER COMPANY

Manufacturers and Engineers • Est. 1898

SOUTH BEND • • INDIANA

WESTERN GAS
NOVEMBER, 1935

Guest Editorial



HOW TO USE THE BREATHING SPELL

By F. S. WADE
President and General Manager
Southern Counties Gas Company, Los Angeles, California

NOW that we are to have a "breathing spell" from outside interference in the conduct of our business, it is a good time to give critical thought to methods for improving our position with our customers.

The gas business has never lacked for ideas to better the way in which we do business. If we had a weakness it has been in the failure to carry out many of the improvements suggested by men who are close to the actual consumer. These matters have been ably discussed at numerous conventions; here are just a few of them:

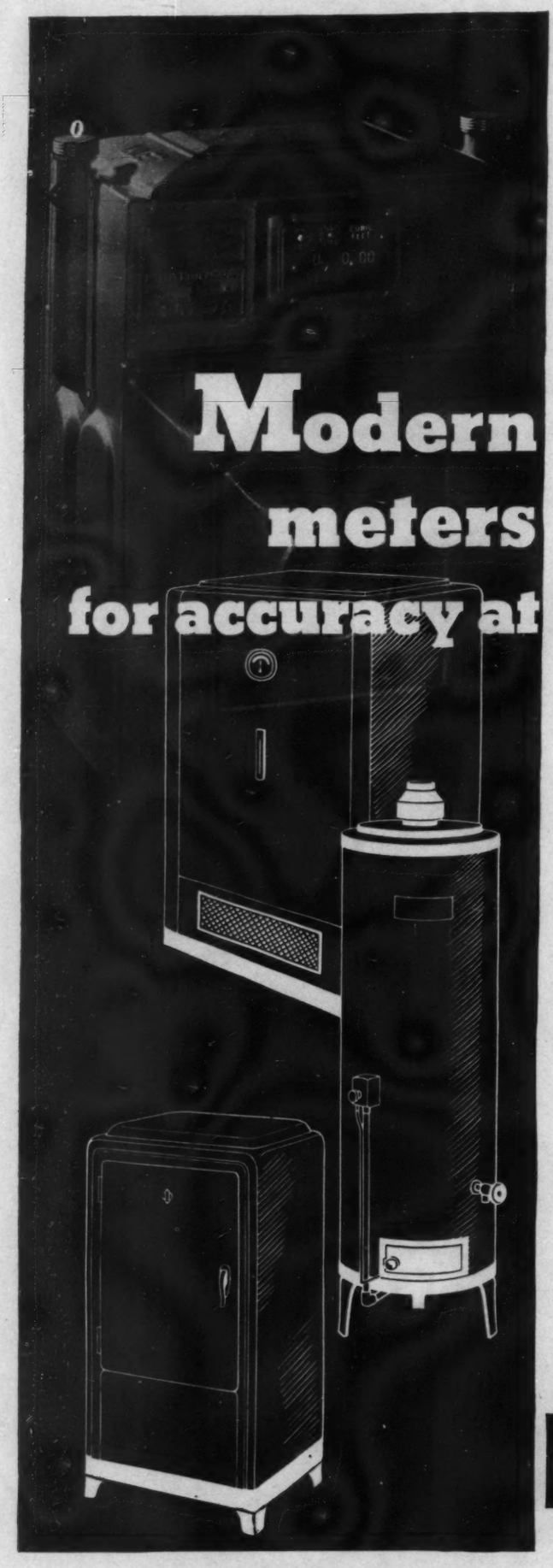
What about our credit policies? During the sad years since 1929, many utilities have gained, sometimes unfairly, the reputation of being too "tough" in shutting off gas service for unpaid bills. Under the circumstances this has been inevitable. There is one thing, however, we could do that would eliminate many regrettable cases. A responsible employee, given sufficient authority to permit the exercise of individual judgment, should pass finally on every order to shut off a meter for nonpayment. The issuing of a final shut-off order should never be permitted to become a routine matter dependent solely upon the expiration of time.

Then there is the question of our requiring a deposit in advance to guarantee the payment of domestic gas bills. Preliminary investigation of the cost of handling consumers' deposits indicates that the increased loss, which might be expected if such deposits were waived from domestic consumers, would be only slightly in excess of the cost of this whole deposit business. If it were found practicable to waive the requirement of a deposit from domestic consumers, the gain in public esteem would be great.

The form, appearance and understandability of our gas bills deserve most careful scrutiny. Too much have these things been dictated by the convenience of mechanical bookkeeping; too little by the standpoint of the person who receives the bill and who wants to know how much gas he has used, what rate he is charged, and the time covered by the charge. If the bill form being used by your company does not show clearly—in a way that your most inexperienced consumer can understand—the period covered, the hundreds of cubic feet used and the rate per hundred, then it does not show the information that appears on practically every other bill he receives. The service of gas is a mysterious business at best and we can ill afford to have this mystery deepened by the bills we use.

Are we doing everything we can to make easy for our customers the routine necessary when they begin our service or end it? A recent examination of some of the application forms we use discloses that they are too legalistic and that they partake too much of the form of a contract where none could be made. It would pay us to study all of the forms that we ask our consumers to sign and eliminate, or revise, any language that is not simple and direct.

We hear of extensive plans for campaigns of national, or lesser, scope to improve the standing of the gas business. Important as such plans may be, it seems equally important that we use the time granted by the present "breathing spell," if such indeed we are to have, to check the little routine affairs of our business which, although routine to us, are the contacts that determine how the public feels toward us.



Modern meters for accuracy at low rates of flow

● As a public relations aid the successful merchandising of modern appliances is acknowledged without equal.

As revenue builders and continuous selling agents for the true economy of gas, the value of these appliances is in direct proportion to the ability of your meters to measure accurately the low rates of pilot flow as well as the higher capacity ranges.

For that very reason, realistically minded gas company executives purchase meters as an INVESTMENT IN ACCURATE REVENUE REGISTRATION.

The cost of the meter is, without question, the cost of that accurate registration maintained over a maximum period of years.

Pursuing a policy of continuous, progressive development and improvement . . . avoiding abrupt and confusing change from "current" to "new" models . . . American Meter Company has incorporated new developments as fast as these have been thoroughly proved.

Thus through gradual evolution AMERICAN meters are consistently maintaining their leadership in accurate revenue registration.

AMERICAN METER COMPANY
INCORPORATED
Measurement and control of Gas, Oil, Steam, Air and Liquids
ESTABLISHED 1836

November, 1935

WESTERN GAS

"Reg. U. S. Pat. Off."

Vol. XI, No. 11

LOS ANGELES—810 South Spring Street . . . . . 1064 Peoples Gas Building—CHICAGO

National Advertising for Gas

COOPERATIVE advertising for gas on a national scale —vitally needed for the past 10 years—came a long step toward actual accomplishment last month. At the A.G.A. Chicago convention the industry definitely committed itself to a three-year program of advertising and publicity, as outlined on another page of this issue. An annual fund of $500,000 has been budgeted tentatively, to be raised on a basis not to exceed 4 cents per meter. A committee is at work on financing and details of the campaign.

Experience with cooperative advertising in other industries, and with previous attempts to inaugurate it for the gas industry, teaches that it is comparatively easy to arouse enthusiasm for the general idea, but difficult in the extreme to get an advertising program out of the "planned" stage. Company managements hold the key to the situation, for hedging over costs can delay the effort indefinitely.

All red tape was cut at Chicago to put the promotion for this national campaign speedily under way. The example is one to commend to individual company managements, when it comes time to make commitments for sharing campaign costs.

No one doubts the real need for supporting the position of gas in the home; a capable committee has the project in charge; the scene is set for prompt action and the need is now!

Profit-Sharing Plan for Detroit

DIFFERENCES long existing between the City of Detroit and the Detroit City Gas Co. were composed last month when a new type of earning structure went into effect for the gas company. The profit-sharing idea is not completely new as applied to a gas company's relation with its customers, but there are few situations where it has been worked out in practice. Details of the Detroit plan are given elsewhere in this issue; in brief it provides for sharing earnings above a base figure between stockholders and customers, with dividends to be distributed to customers at the close of each fiscal year in proportion to the amount of gas used by each.

Application of the Detroit plan will be watched with interest by all utility companies. This type of plan, when predicated upon a base earning mutually fair to company and customers, should offer obvious advantages. It should retain for the utility the inducement to effect economies in operation and build increased load, since some measure of profit still reverts to stockholders above the base earning. At the same time it should effect the equivalent of rate reductions, or increases, currently with changing business levels, and should eliminate the most common grounds of rate controversy.

Get Behind the Gas Engine

COMMERCIAL gas engine load has made real progress, even through depression years, but the industry has scarcely begun to appreciate its possibilities. In view of the many ideal features of this class of business, from standpoints of revenue, load factor, and the ability of the engine to render superior service at savings to the customer, it is difficult to understand why more companies are not already making use of this sales avenue.

Within recent months numerous engine installations have been made to drive generating units for lighting and power supply to individual commercial customers, effecting savings of more than 50 per cent in former electric current charges. Another engine field which seems promising is that of commercial air-conditioning. Several engine manufacturers are investigating this field, with a view to developing special units to drive compression refrigeration equipment.

Commercial sales departments, especially in natural gas territory, should figure the gas engine into their major sales promotion for 1936.

★ ★

CONTENTS FOR NEXT MONTH

Sales Promotion Sidelights, from Australia

America has no monopoly on electrical competition, from the government or otherwise. Australian gas companies are emerging from what the author describes as their "somnolent satisfaction" to meet their situation with alert sales methods, herein described.

Underground Gas Storage

Reporting data from a three-year experiment with a small reservoir which has been used successfully for storing natural gas.

Stage Sets for Cooking Demonstrations

A practical discussion of how to construct attractive and efficient modern stage kitchens.

Advertising the "Truth About Cooking"

How one company gave its public the facts on gas vs. electric cooking is told in this feature.

Job Training in House Heating Service

Training methods can have much to do with results secured in service work. This article outlines the plan used by one large company for house heating training.

Calcium Chloride Dehydration Plant

One of the few plants using this method for dehydrating natural gas is described in this article.

HOUSE HEATING

Presenting the first of six basic burner equipment and controls, the system, gas and electric supply,

By B. A. JOHNSON

PRACTICALLY every gas company interested in going forward, is actively engaged in the sale of and in the promotion of the sale of equipment for heating homes where gas is to be used as the fuel. Company executives recognize the importance of this class of business as not only desirable but essential to the success of any gas company.

B. A. JOHNSON

In its development, however, many branches of gas heating have become separated or detached from the main stem, so to speak. This separation has become so wide in some cases that certain branches are looked upon as being complete in themselves and are treated individually rather than with a full understanding of the relation they bear to the various other parts which go to make up the successful whole.

Let us, therefore, consider this thing called "Gas House Heating" from an overall point of view. The discussion will have to do only with the physical aspects of the installation, as it is not the writer's aim here to go into company policies, customer relations, advertising, selling methods, or financial features. These articles are intended to serve as a review of house heating fundamentals so arranged as to bring to the reader—be he executive, sales manager, engineer, service man or salesman—a further appreciation of the subject as a *whole*.

What is house heating service to the customer? House heating service to the customer means the fulfilling of his heating needs in such a way that he will feel he has gained a great deal in the way of convenience and comfort at a minimum of expense.

What does the rendering of house heating service mean to the company? Rendering satisfactory heating service to the customer accomplishes the primary result desired by the company, namely, increased revenue, and also makes possible revenue increases from other sources because of the good will created.

What are the contributing factors to a successful gas heating installation? There are eight important factors on which a good gas heating application depends:

1. *Gas Burning Equipment:* The burner itself and its adjustment as it relates to the success of the heating installation.

2. *The Control System:* The complete controls necessary for automatic operation of the gas heating system both from the standpoint of supply of heat and safety of operation.

3. *Heating Plant:* The boiler or furnace itself, and the flue, and their relation to the heating requirements and proper operation.

4. *Heating System:* The method of heat distribution and its bearing on the distribution of heat and comfort.

5. *The Supply of Gas:* Having to do with the transmission, the distribution, the quality and the consistency of the gas supply.

6. *The Supply of Electricity:* Proper voltage and wiring.

7. *Building:* The construction and heat losses and the way in which it relates to the successful operation and to the heating cost.

8. *Customer Usage:* Having to do with the way in which the customer makes use of his gas heating equipment and the effect on comfort and cost of operation.

Without due consideration, it might be assumed that a combination of the gas burner equipment, the heating plant and the control system, constitutes a gas heating installation. However, the success of this *part* of the installation is dependent upon the way in which these factors are coordinated with the characteristics of the heating system and the building, as well as with the way in which they are used by the customer. Each one of the eight factors enters vitally into making the job wholly successful and each, therefore, should be regarded *always* in the light of the relation it bears to the seven other factors.

The required coordination of all factors to a successful installation is first made possible through having a thorough knowledge of all the facts concerning the job. These facts are obtained by means of what the writer calls *The Heating Survey*.

Very likely many salesmen would feel that if it were not necessary to give a prospective heating customer an estimate of operating cost, it would not be necessary to make a survey. However, it should be apparent that the heating survey (whether or not an estimate is made) supplies two important weapons for selling house heating service:

1. The correct information about the customer's heating habits and equipment, so that an intelligent presentation of the case for gas heat can be made as it applies to the individual prospect.

2. The information that is necessary for the engineering and operating departments to select the equipment and make the adjustments best suited to the needs of the particular installation, thereby insuring an effective heating application, satisfactory heating results, and, hence, a satisfied gas heat user.

In dealing with the various subjects which are pertinent to house heating, the information which should be obtained in a survey will become apparent and will, therefore, not be listed here. The important point to remember about the survey is that in principle it should supply the information upon which the company relies in drawing its conclusions on the customer's requirements for satisfactory heating service.

With a background established for this series of related articles on gas house heating, attention is now turned to the first of the eight fundamentals listed earlier—the gas burning equipment.

GAS BURNING EQUIPMENT

The subject of gas burning equipment deals with the means used to burn

FUNDAMENTALS

and coordinated articles covering heating plant, heat distribution the building, and customer usage

Staff Engineer, Space Heating Division,
The Peoples Gas Light and Coke Company

gas and to deliver the heat (resulting from combustion) to the boiler or furnace.

Gas burning equipment in its simplest form would require only a pipe of suitable size running from the meter to a gas valve and into the combustion chamber. However, experience has shown that this is not practical nor economical, and therefore the burning equipment of today is normally comprised of (1) Gas Supply Equipment; (2) Gas Burning Equipment.

Gas Supply Equipment:

Street service connection, gas meter, supply piping (fuel run), and gas pressure regulator. These are the means of supplying the fuel to the burners and measuring the amount used, and will be covered in a later article under the subject "Gas Supply."

Gas Burning Equipment:

(A) *The Orifice:*

1. All types of burner equipment are provided with a gas orifice which, in most cases, has two important functions:

(a) To admit the proper supply of gas to the burner by its size and the pressure applied.

(b) To provide a gas stream which is able to "inspirate" a certain quantity of air (Primary Air) which is mixed with the gas before it reaches the point at which combustion takes place.

2. Adjustable and fixed orifices are the two types in general use on gas burning equipment.

When fixed orifices are used, the only means of changing the gas supply to the burner is to change the pressure of the gas supply at the orifice or install one of a different size. Burners which use this type of orifice usually have an adjustable gas pressure regulator which can be set for different pressures according to the gas supply required for a given size orifice.

On burners using the adjustable type orifice, the gas pressure regulator sometimes has a fixed setting and consequently the only means of changing the gas supply to the burner is by adjusting the orifice.

3. It is important that the orifice be free from burrs or foreign substance and that it be drilled straight. Also that the size with respect to venturi ports, etc., be such that the primary air injected for the amount of gas passing through the orifice be properly related. (Always refer to manufacturer's instructions on the size orifice to be used for different capacities).

(B) *The Primary Air Supply:*

The air taken in by the gas stream serves to initiate combustion and is distinguished from the air supplied after combustion has started by the commonly accepted term "Primary Air".

The amount of primary air, therefore, must be controlled so as to secure the desired combustion at the burner port. This adjustment should be made to give just enough air for prompt and quiet ignition, and quiet burning without any sign of a yellow tip in the flame.

(C) *The Mixing Tube:*

When gas is discharged through an orifice into the end of an open tube, the force in the gas stream draws in a quantity of air. This tube is designed to give a ready intake of primary air and efficient mixing of this air with the gas before it reaches the burner head or ports. It should, therefore, be free from obstructions and foreign substances so that a correct adjustment of primary air can be obtained and so that the gas can pass freely into the burner head and not out through the primary air openings or inlets.

(D) *The Burner Head:*

The burner head is the point at which combustion begins. The air-gas mixture produced in the mixing tube comes through ports or slots in the burner head where additional air (Secondary Air) is supplied so that complete combustion takes place. The openings in the burner head are designed to give a free flow of the gas-air mixture at a velocity that insures combustion at this point and not in the mixing tube or away from the ports, as is the case if the ports are too large or too small. Some manufacturers have adjustable burner heads or different sizes for different ratings and it is important to follow their instructions when gas inputs are changed.

(E) *The Secondary Air Supply:*

1. Since only part of the air needed to burn gas in atmospheric burners is supplied as primary air, it is obvious that means must be provided to allow additional air to be conducted to the burning gas so that complete combustion can be assured. This additional air is supplied to the "gas-air" mixture at the burner head, and is known as "Secondary Air".

Manufacturers have been careful to design burner equipment so that the secondary air that is allowed to enter the appliance is directed to the point of combustion and also allowed to mix freely with the burning gas. Raised port burners, secondary air ducts, and deflectors, are made for this purpose. It is important therefore, that all of the air that is allowed to enter the combustion chamber as secondary air come through the *proper* openings where it can be controlled, and *not* from around the sides of the ashpit doors and through leaks around the base of the boiler or furnace.

Any air that is allowed to pass through the boiler or furnace which is not used for combustion, is heated to the stack temperature and therefore represents an excess waste of heat up the chimney.

2. The amount of secondary air that is allowed to enter the combustion chamber should be just enough to give perfect combustion plus a slight excess to insure complete combustion of all particles of gas. Insufficient secondary air results in a long lazy blue flame sometimes called "floating flame." The control of this secondary air is effected by:

(a) The adjustment of the secondary air control.

(b) The draft on the boiler or furnace, controlled by the flue pipe size, stack temperature and the flue passage resistance.

(Continued on Page 36)

UNIT COSTS IN UTILITY VALUATION

Need for Time Studies on New Construction Work Emphasized

By
JUDGE R. D. GARVER
Chief Counsel, The Gas Service Company
Kansas City, Missouri*

FOR some years I have devoted my time almost exclusively to rate cases. Many properties in many places have been valued by engineers for the respective companies and for the respective commissions. The thing that has impressed me most in these cases is the lack of uniformity among engineers as to matters which should be uniform. Valuations presented by the adversaries are so far apart that the courts can hardly be criticized for sometimes arriving at the conclusion that such testimony is always colored and is entitled to little weight.

I have just stated that the valuations of the adversaries are usually far apart. In most of these cases the parties are the utility and the commission. Perhaps the commission should not be called an adversary — certainly it was never intended to be—but in actual practice it most frequently is.

In my experience it has been customary for the commission to employ engineers to make its valuations. As I recently stated in a brief before a state commission, "It would be abhorrent to any lawyer to have a judge employ witnesses to appear against him in litigation before that judge; yet that is the present situation."

Where the commission employs engineers to represent it and constantly advises with them, the relationship becomes as close as that of any employer and employee. In the ordinary course of that relationship, the employee's valuation would be accepted rather than that of an outsider, even if not an adversary.

Therefore, it is quite apparent that if the valuations made by engineers employed by a commission, or by a city, or by any other adversary, are materially lower than the valuations of the utility, and if such valuations are usually and naturally adopted by the commission, the utility gets the worst of it if such valuations are inadequate.

I can readily understand why valuations differ and would never expect two engineers to arrive at the same figure. The human element makes possible honest mistakes of fact and judgment. However, no such reasoning explains why the valuations of engineers employed by commissions and cities are always low. Not a little low, but inexplainably low.

Something is radically wrong with one side or the other.

Before all such testimony is discredited by reason of its irreconcilable difference some effort should be made toward the adoption or recogniton of some standard of unit costs which an engineer could not ignore and maintain a desirable reputation.

In my personal experience, I have rarely felt that any engineer was knowingly dishonest in his testimony. But on the other hand it is hard to believe that mere partisanship can warp sound judgment to such an extent as has developed in rate litigation.

When I graduated from law school, the commencement address was delivered by an experienced lawyer who in the course of his remarks warned us fledglings against becoming so partisan that we lost the proper point of view. He illustrated his point with a story I have repeatedly told. He said many years ago when Oklahoma was not yet invaded by civilization, two white men were travelling on foot over an Indian trail and came upon the dead body of an Indian, wrapped in a blanket. Being good Samaritans, they decided to carry the body to the next settlement and proceeded so to do. The man at the head being of an imaginative and romantic turn of mind conjectured to his companion as they trudged along, that this was a great Indian Chief, that he led his tribe in battle, that he was a great hunter, that he stood first in the councils of his nation; and in such manner painted a most glowing picture of a great man. The companion at the foot trudged along in silence. Finally, the blanket having become somewhat disarranged, he remarked, "That is a beautiful picture you have painted, but from my point of view, I believe your Big Chief was a squaw."

R. D. GARVER

The value of a given piece of gas pipe line of a certain size, a certain length, and buried to a certain depth in a certain location, is not a thing that should vary with point of view. It should appear the same from either end. But it does not.

Both engineers, the one at the head and the one at the feet, see the same thing physically. There is no trouble or real diversity of opinion as to the value of the pipe. They each get quotations which usually check. The trouble comes when they start to picture the life this pipe led from the time it left the mill until it reached its inert position of a corpse buried in the earth. One sees a Big Chief; the other sees a squaw.

I have now pending rate litigation involving a transportation system and two small towns. One of these small towns, having only 251 consumers, was built about 1929. It cost in actual cash $30,632. Engineers for the company value the property as of this date at $27,662. Engineers for the commission place the same value at $20,371—a variance of $7,291 on a property which costs only $30,000.

The transportation system in this case is valued by the company engineers at over $100,000,000 so it can be readily seen that if the same method of valuation which produced a difference of $7,291 on a property which cost $30,000 is used on a property which cost

*Presented before the Natural Gas Department, American Gas Association, at 17th Annual A.G.A. Convention, Chicago, October 14.

(Continued on Page 60)

Advertising Luncheon Symposium—held October 17 at the Palmer House, Chicago, during A.G.A. sessions.

NATIONAL ADVERTISING IN 1936

A. G. A. Convention Approves National Campaign; Manufacturers Complete A. G. A. E. M. Organization

By CRAIG ESPY
Mid-Western Manager
Western Gas

SENSING improved business conditions and a determination on the part of the gas industry to make the most of them, the 2,000 or more gas men attending the 17th Annual A.G.A. Convention at Chicago took home with them an optimistic outlook for the year 1936. This year's Convention was held with the Palmer House as headquarters, and ran from October 14 to 17.

First mention, under the head of actions taken at the convention, should go to the formulation of a long-awaited national advertising program for the gas industry. Several abortive attempts have been made in years past to initiate national cooperative advertising, but this year at least has brought the project to a definite stage.

Immediate impetus for the national advertising program was supplied by a committee of the Pacific Coast Gas Association, made up of Jas. F. Pollard, Seattle Gas Co. (chairman), F. M. Banks, Southern California Gas Co., H. M. Crawford, P.C.G.A. president, and H. L. Masser, Los Angeles Gas and Electric Corp. This committee, following a resolution at the September convention of the P.C.G.A., was charged with the responsibility of taking the national advertising project before the executive board of the American Gas Association at the Chicago sessions. Several western companies through these representatives committed themselves to contributing 4 cents per meter as a nucleus for a national advertising fund, provided that a representative portion of the industry would fall in line.

The P.C.G.A. committee attended the meeting of the A.G.A. executive board on Monday evening, October 14, when Mr. Pollard as chairman presented the proposal. Mr. Pollard was requested by the board to lay the matter before the general convention, which he did in a stirring message on the Wednesday general session program. The ovation following his remarks left no doubt as to the convention's sentiments, and steps were taken immediately to set up a procedure for bringing the campaign into being. President Percy S. Young named a committee to take the project in charge, made up of Herman Russell, president of Rochester Gas & Electric Corp. (vice-president of the A.G.A. for the coming year) as chairman, F. M. Banks, Walter Beckjord, Davis M. DeBard, L. B. Denning, R. W. Gallagher, Conrad N. Lauer, B. J. Mullaney, Henry Obermeyer, Jas. F. Pollard, H. R. Sterrett, H. F. Smiddy, T. J. Strickler, and P. S. Young.

This committee was authorized to proceed with plans for financing and conducting a campaign of national advertising and publicity. In a meeting held at the convention following its appointment the committee decided to work toward a three-year advertising program in media of national circulation, with an annual fund of $500,000 as the objective—this to be raised by individual gas company participation on a basis not to exceed 4 cents per meter. The program is predicated on participation of at least 70 per cent of the industry, on a meter basis. Theme of the program, of course, will be gas in the modern home.

A committee made up of Messrs. Obermeyer (chairman), Gallagher, Mullaney, Pollard and Young, was delegated to select an advertising agency to handle campaign details.

Contributing to the interest in national advertising were the programs of the advertising luncheon symposium held Thursday, and the Natural Gas Department, Monday afternoon. The advertising symposium brought together members of the Public Utilities Advertising Association and interested members of the convention, and was presided over jointly by Henry Obermeyer as chairman of the A.G.A. Publicity and Advertising Committee and J. R. Pershall, president of the P.U.A.A. Many of the industry's advertising executives put the weight of their approval behind the proposed national advertising campaign at this meeting.

Frank C. Smith, president and general manager of the Houston Natural Gas Co., spoke before the Natural Gas Department at its Monday meeting on the subject of "Building the Natural Gas Load," and brought some forceful observations to bear upon the need for retaining the present cooking load. Starting from the reasonable premise that the time to protect a market is while you still have it, Mr. Smith of-

fered exhibits of electric advertising and editorial publicity in current issues of national women's magazines, contrasting them with gas advertising and publicity in the same media, much to the discredit of the gas showing. While the present ratio of gas and electric range sales is still highly in favor of gas, Mr. Smith made the point that the present barrage of publicity for electric cookery is silently and gradually building up a public preference for the "electric way"—and our market will be slowly cut from under us unless the gas industry takes measures to counteract these forces. He made the further pertinent observation that gas advertising at the present time will still sell gas ranges, but that later, when preferences have been set in favor of electric cooking, desires created by gas advertising for modern cooking equipment will react in more electric range sales. The only possible answer, said Mr. Smith, is a comprehensive national educational and merchandising program designed to retain as well as develop our domestic cooking load.

L. B. DENNING
A.G.A. President-Elect

W. T. RASCH
President, A.G.A.E.M.

WM. MOELLER, JR.
Chairman
Natural Gas Dept.

MAJOR FORWARD
Managing Director
American Gas Assn.

ELECTIONS

As result of elections at the Chicago Convention the following were placed in office for 1935-1936:

President: L. B. Denning, president, Lone Star Gas Co., Dallas, Texas.

First Vice-President: Herman Russell, president, Rochester Gas & Electric Corp., Rochester, N. Y.

Second Vice-President: N. C. McGowen, president, United Gas Public Service Co., Houston, Texas.

Treasurer: J. F. Rooney, assistant to vice-president, Consolidated Gas Co. of New York, New York, N. Y.

Accounting Section: Chairman—F. L. Griffith, vice-president, The Peoples Gas Light & Coke Company, Chicago, Ill.; Vice-Chairman—E. J. Tucker, assistant general manager & secretary, Consumers Gas Co. of Toronto, Toronto, Ont., Canada.

Commercial Section: Chairman—C. E. Bennett, president, Binghampton Gas Works, Binghampton, N. Y.; Vice-Chairman—F. M. Banks, vice-president, Southern California Gas Co., Los Angeles, Calif.

Industrial Gas Section: Chairman—C. W. Gale, new business manager, Knoxville Gas Co., Knoxville, Tenn.; Vice-Chairman—Ralph L. Manier, industrial heating engineer, The Syracuse Lighting Co., Syracuse, N. Y.

(Eugene D. Milener of the A.G.A. headquarters staff on November 1 was appointed secretary of the Industrial Gas Section, succeeding C. W. Berghorn who has resigned to become executive secretary of the Association of Gas Appliance and Equipment Manufacturers. Mr. Milener will also continue as secretary of the Committee on Industrial Gas Research and the Committee on Domestic Gas Appliance Research.)

Manufacturers' Section: Chairman—John A. Fry, president, Detroit-Michigan Stove Co., Detroit, Mich.; Vice-Chairman, apparatus division—Merrill N. Davis, vice-president in charge of sales, S. R. Dresser Manufacturing Co., Bradford, Pa.; Vice-Chairman, appliance division—J. Scott Fowler, president, Lovekin Water Heater Co., Philadelphia, Pa.

Publicity and Advertising Committee: Chairman—Henry Obermeyer, assistant to vice-president, Consolidated Gas Company of New York.

Technical Section: Chairman—F. A. Lydecker, general superintendent of gas distribution, Public Service Electric & Gas Co., Newark, N. J.; Vice-Chairman—Martin I. Mix, superintendent of distribution, The Peoples Gas Light & Coke Co., Chicago, Ill.

Natural Gas Department: Chairman—William Moeller, Jr., vice-president, Southern California Gas Company, Los Angeles, Calif.; Vice-Chairman—George E. Welker, president, United Natural Gas Co., Oil City, Pa.

Robert W. Hendee, president of Oklahoma Natural Gas Co. was elected to the Natural Gas Department managing committee; re-elected to this committee were F. H. Brooks, Northern Gas and Pipe Pine Co.; H. L. Masser, Los Angeles Gas and Electric Corp.; H. L. Montgomery, Cities Service Gas Co.; T. J. Strickler, Kansas City Gas Co.; and M. W. Walsh, Louisville Gas and Electric Co.

Decision was reached at the Convention by the Natural Gas Department's managing committee to hold the natural gas convention in Dallas, Texas between the dates of May 1 and May 15, 1936. Both the Adolphus and Baker Hotels will be used as headquarters, with morning sessions at the Baker and afternoon sessions at the Adolphus.

A.G.A.E.M. ORGANIZATION

Formal organization of the Association of Gas Appliance and Equipment Manufacturers at a meeting held Monday morning, October 14, was another development of lasting importance to the industry which came to a head at the Chicago Convention. At a general meeting of manufacturers held in New York on June 11 a committee was charged with the duty of organizing a trade association to consolidate the advantages secured under the Gas Appliances Institute and advance the interests of the gas industry in several directions. Details were worked out by a sub-committee made up of John A. Fry (chairman), F. E. Sellman, Donald McDonald, and W. T. Rasch. Approval of the A.G.A. executive board was given the plan worked out by this committee on September 11, and the general meeting of manufacturers at the Chicago convention formally adopted the constitution, setting the organization in motion.

The new association is affiliated with the A.G.A. and its members also become manufacturer member companies of the A.G.A. with full privileges conveyed by that status, including laboratory facilities. A.G.A. manufacturer members may become members of the A.G.A.-E.M. if they so desire, with full privileges.

Not less than every three years the new association will conduct an exhibit of products of its members, open on the same terms to manufacturer members of the A.G.A.

Neither the A.G.A. nor the A.G.A.-E.M. assumes any responsibility or liability, financial or otherwise for the conduct of any activity by the other Association.

The primary object of the A.G.A.-E.M., set forth in its constitution, is to promote the use of gas as a fuel. Promotion of cooperative relations with gas utilities, dealers and customers; establishment and administration of fair trade practices; conduct of exhibits; and general furthering of cooperation among its members, are other purposes around which the organization's activities will revolve.

A.G.A.E.M. is incorporated under the laws of the State of Illinois, with its principal offices at 60 East 42nd St., New York City. Its newly elected officers are the following:

President: W. T. Rasch, American Gas Products Corp.

Vice-President: Merrill N. Davis, S. R. Dresser Manufacturing Co.

Treasurer: Donald McDonald, American Meter Co.

Executive Committee: Consists of F. E. Sellman, John A. Fry, F. G. Curfman and Frank Adams, with Messrs. Rasch, Davis and McDonald as ex-officio members.

C. W. Berghorn has been elected executive secretary of the new manufac-

(Continued on Page 28)

PILOT STABILITY on House Heating Conversions

By CARL A. NONNENMACHER
Heating Engineer, Peoples Light Company
Davenport, Iowa

GAS heating — dependable, automatic, and safe—that is, if the seldom mentioned and unromantic pilot is performing its faithful duty. This unsung hero of a successful gas-heated home must meet, cope with and conquer a multitude of trials and tribulations in its daily service.

As a rule pilot difficulties are encountered immediately after making a conversion installation. In other words, if pilot trouble is likely to develop, the fact generally becomes known soon after service is instituted.

Pilot difficulties may be divided into two general sources: (a) mechanical; (b) atmospheric. The term mechanical source is construed to cover such faults as arise from a sticky meter, sticky governor, orifice stoppage resulting from dust or oil, carbon deposit on pilot ports, pilot ports too close to burner ports, etc. The remedy for pilot failure due to any of the above causes is obvious.

Atmospheric causes, however, present a more difficult solution in that such difficulties cannot be ascertained so readily. Troubles in this classification, as the name suggests, arise from erratic and unstable air conditions in the vicinity of the pilot. This may be due to down draft, burner back flash, or excessive back pressure. Pilot ills due to these conditions are likely to be compound; that is, while the pilot failure seemingly may be due to a certain condition, this same condition is probably due to another fault. Take the case of the back flash. Naturally a severe back flash will extinguish a pilot. The back flash may be due to a number of things. The main gas valve shuts off too slowly, the main gas valve leaks, the pilot is too close to burner ports, the gas valve is too far away from burner head, the orifice is rough, burner head is too hot, burner ports are too large, burner head pressure is too low—all these contributory causes either alone or in combination may be the reason for the back flash.

Back pressure on the burner head is our key to troubles having their source in back flash. Yet having a key to the trouble does not necessarily mean that we can eliminate the cause. Sometimes we must resort to measures for strengthening the pilot rather than entirely eliminating the cause. This reasoning has a parallel

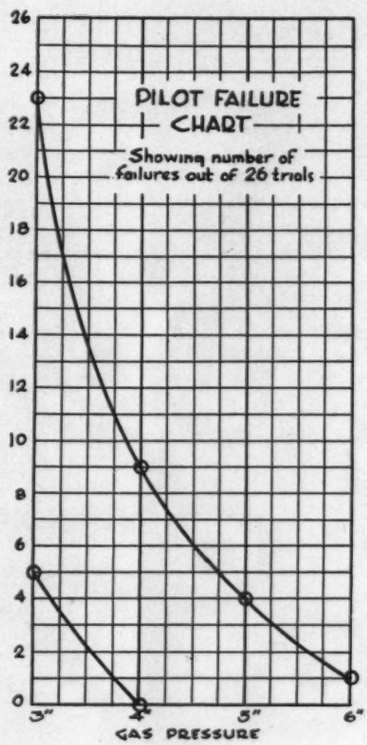


FIG. 1
(Short curve, No. 68 orifice; long curve, No. 70 orifice.)

in life—work may make us tired, but we do not stop working just so we will not get tired! What we do is eat strengthening foods and get plenty of sleep—so that we can overcome the tired feeling.

It is true that on some conversion installations excessive back pressure is found. This is particularly so on down draft furnaces. For causes of this kind one should make a strong attempt to rectify this condition. The height of the divertor plays a most important part in furnace back pressure. If the divertor is low the natural furnace draft is obviously decreased. Therefore, when the gas valve shuts off there is a most reasonable chance for back pressure to be built up (built up in excess to burner head pressure) to the extent that the burner flashes! Consequently on furnaces of long or downward flue travel the draft divertor should be placed at a higher level than on the more conventional type. Balanced butterfly dampers of the type commonly used on oil burner installations work nicely in overcoming *this* trouble.

Another practice that accentuates pilot difficulties attributed to back flash is that of grouting in the burner head—that is, filling in the space between burner head and furnace fire pot. Noise is due to sudden expansion. Back flash is noise. Any expansion in the combustion chamber is looking for an avenue of escape. With a burner grouted, the possible means of escape are limited to regular outlet, small passage around pilot stem, burner ports, *and* pilot ports. Therefore by removing some or all of the grouting a more ready means is provided for the escape of this built up pressure.

From this explanation it is seen that a pilot shield—depending on its location —could either increase or decrease pilot failure. But as stated earlier, sometimes it is best to leave back pressure as found, and confine our help to strengthening the pilot, so that it can withstand the most rude and relentless back flash. In such cases it must be decided whether it is best to supply more gas, or the same amount of gas at a higher pressure.

A conversion burner of typical design was installed in a cast iron furnace with damper adjusted to give abnormal back pressure and back flash possibilities. The burner was in operation some 30 minutes before beginning the test. The manual control valve was used to slowly close the gas supply and produce thunderous back flash. A test was made with a No. 70 orifice at 3-inches pressure. Twenty-six trials were made at 3-, 4-, 5- and 6-inch water pressure. Out of 26 trials at 6-inches pressure, with a corresponding consumption of 2.3 cu. ft. per hour, as recorded by a wet meter, one failure resulted. Then, an orifice was found (No. 68) which would pass approximately the same amount at 3-inches pressure. The result of a No. 68 orifice at 3 inches pressure, passing 2.5 cu. ft. per hour, was 5 failures out of 26 trials. (Fig. 1 summarizes the tests).

(Continued on Page 55)

Winters are really winters in southwestern Wyoming. Repair trucks and tractors are seen in the upper view, on Mountain Fuel Supply Co. lines, while lower scene shows a company crew searching for the pipeline preparatory to repair work.

Pipe Line Corrosion Rocky Mountain

By C. R. HETZLER

THE matter of pipe line corrosion and particularly the effect of electrolysis in accelerating the destructive effects of corrosion have become of grave importance. Pipe line corrosion problems are not confined to any single locality but are worldwide in their distribution. Wherever and whenever a joint of iron pipe is placed in the ground, there and then corrosion in some form and degree becomes active.

The great increase in pipe line construction during the past few years and the very large investment involved have brought a new realization of the necessity for some control over pipe corrosion agencies. Unfortunately no simple satisfactory formula is available for all localities. Methods which retard corrosion in one area are not necessarily satisfactory in a different area. Pipe corrosion itself is much more active in certain districts than in others.

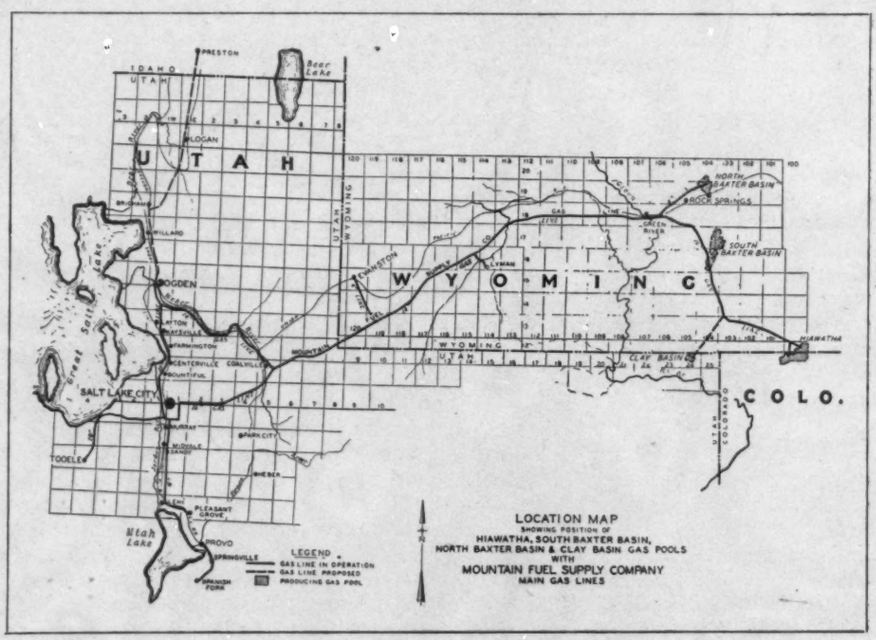
Our present knowledge on the underlying reasons causing pipe corrosion is far from complete. Many of the companies are conducting research studies into various phases of the problem and observations under pipe line working conditions are being made in numerous localities. It would be a very valuable aid to all concerned if these primary observations could be made accessible to all working on the problems of pipe corrosion.

The Mountain Fuel Supply Co. is a fully integrated natural gas company engaged in the production, transportation and marketing of natural gas. The company has developed and operates natural gas fields in northwest Colorado, southwest Wyoming and eastern Utah. This gas is transported through some 285 miles of main line to serve Salt Lake City, Ogden, and adjacent towns in Utah and southwest Wyoming. The main gas line crosses mountains, deserts, rivers, gravel terraces, alkali flats and a wide variety of physiographic conditions. In some sections of the line pipe corrosive agencies have been active, in other sections the pipe is comparatively unaffected.

Electrolysis in one of its many forms has been recognized as a prime factor in causing pipe corrosion. Electrolysis may be defined as the decomposition of some metallic compounds into their component parts through the agency of electricity. The oxidation of the iron in a joint of pipe commonly referred to as rusting was long thought to be the major destructive agency of corrosion. However, in many cases ordinary rusting is in itself but a minor evil and, in fact, often affords some protection against the much greater destructive effects of electrolysis.

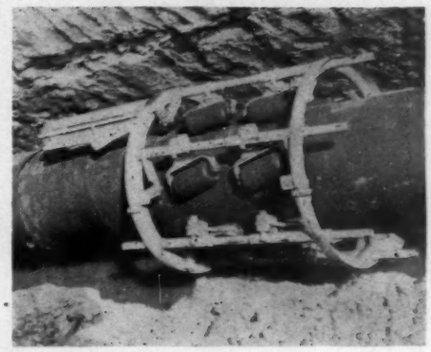
It is well known that electric currents are constantly escaping from their conductors into the air and the ground from electric railways, power transmission lines, generating plants, electric furnaces and machinery and numerous other sources. These escaping currents, when picked up by underground pipe lines become active and electrolysis and corrosion surely follow. Perfect insulation, of course, would be the obvious answer to the problem of protecting a metal pipe line from these stray electric currents but perfect insulation of a buried pipe line has been found to be practically and economically impossible.

Whereas a large degree of fairly satisfactory insulation is achieved on the pipe lines of the Mountain Fuel Supply Co. in Wyoming, Utah, and Colorado, the destructive agencies of extreme weather conditions, ground stresses, etc., break down to some extent any insulation so far found. This is not difficult



Problems on a Transmission System

and W. T. NIGHTINGALE*



UPPER: Corrosion pits due to electro-chemical action on main 18-inch line.

LOWER: Wrapping machine used in reconditioning work on Mountain Fuel Supply Co. main line.

to understand when it is realized that along the pipe line temperatures as high as 110° above zero are known in the summer and as low as 40° below zero are known in the winter.

South of Rock Springs, Wyoming, the Mountain Fuel Supply Co. main line and some of the gathering lines arrived at an elevation of 8,400 feet above sea level. During the construction period of the pipe line in 1929 it was found that at these high elevations frozen ground was encountered in cuts as deep as 14 feet below the surface.

In one 14-mile section of the Mountain Fuel Supply Co.'s main 14-inch transmission line in Weber Canyon, Utah, it is necessary that the pipe line cross the Weber River 19 times in addition to making seven double track railroad crossings under the main line of the Union Pacific railroad. A full realization of the extremely difficult physical conditions under which the Mountain Fuel Supply Co.'s lines must operate explains the difficulties met in trying to maintain satisfactory insulation of the pipe lines.

In uncovering different sections of the Mountain Fuel lines during the summer months for reconditioning purposes, it has been found that a considerable amount of moisture accumulates on the lower part of the pipe line and in the bottom of the trench, even in the dry desert sections of the line. It is believed this accumulation of moisture is primarily due to precipitation from the atmosphere caused by the difference in temperatures between the steel pipe line, as determined by the temperature of the flowing gas, and the outside air. It has been found that the most active pitting of the pipe line is associated with the moistened pipe. An examination of the line made two and one-half years after construction revealed pitting up to a depth in excess of 25 per cent of the total pipe thickness.

In order to meet the severe requirements necessitated by the unusual climatic and earth conditions encountered on the Mountain Fuel Supply Co.'s natural gas system it is necessary that the initial pipe line coating retain its elasticity and pliability under very low temperatures. This coating can be held in place by a wrapper to withstand the very great soil stresses and covered by a firm and more resistant outside coating that will afford protection against electrolysis. The foregoing plan is the one now being used along parts of the line in the reconditioning work. Continual future observations only will determine what improvements in materials or in methods or application must be made to achieve a greater degree of protection against corrosion.

In addition to the foregoing a considerable amount of thought has been given to the idea of cathodic protection and it is anticipated that an experimental installation will be made along a section of the main 18-inch pipe line during the present year. Southern Wyoming is noted for its strong and almost constant winds which can be utilized for the generator installation necessary in cathodic protection. Since it appears there must be some moisture in the ground for cathodic protection to be successful, it has been necessary to make detailed geologic studies of the soils, the rocks and the water table of the region through which the line passes. The average precipitation of much of the semi-arid area of southwest Wyoming, through which a large part of the main line of the Mountain Fuel Supply Co. passes, is but 5.9 inches annually for the past three years. In some of the high topographic areas this limited precipitation is subject to rather rapid and complete drainage. In other areas the precipitation is supplemented by drainage from the Uinta Mountains on the south of the main 18-inch line. It is in these latter areas where moisture is more persistent in the ground that the first cathodic experimenting is contemplated.

The main gas transmission lines of the Mountain Fuel Supply Co. for the most part traverse formations or soils derived from formations from Jurassic to Quaternary in age. By far the greater part of this extent lies in beds of Tertiary age. In southwest Wyoming, northwest Colorado and northeast Utah, which comprises the territory through which the Mountain Fuel Supply Co. gas lines are laid, the Tertiary period of geologic time is represented by the Eocene and Miocene series only. The Eocene series in turn is divided into the Wasatch, the Green River and the Bridger formations, each of which is distinctive in pyhsical character. The Miocene series is represented along the pipe line by a few scattered conglomerate remnants only. Lying above the sediments of Tertiary age are the gravel terraced and stream bottoms and clay banks and alluvial deposits ranging in age from Quaternary to the recent. A complete examination of some 225 miles of the above described sediments together with some 60 miles of pre-Tertiary rocks and derived soils and a diagnosis of the general corrosive qualities of each involves a large amount of careful geologic survey as well as a critical examination of the accumulated data.

A full account of all different formations associated with the Mountain Fuel Supply Co. pipe line righ-of-way would involve a great deal of geological description. In many places an understanding of the processes of deposition

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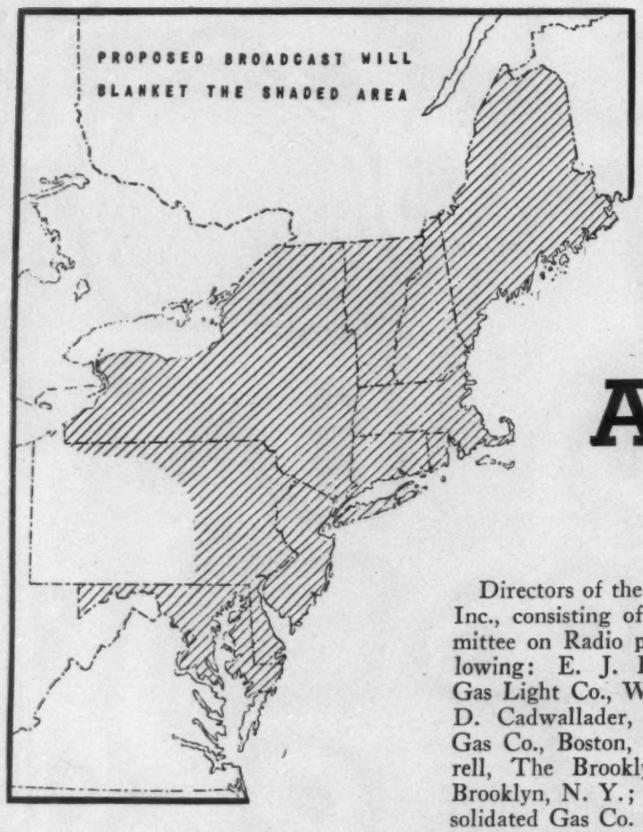
*C. R. Hetzler is vice-president, and W. T. Nightingale is geologist for the Mountain Fuel Supply Co.



"Mystery Chef" Radio Program Assured for East

COOPERATIVE radio advertising, primarily designed to support the position of gas as the ideal cooking fuel, and also to popularize it in other domestic applications, is almost a reality for a group of gas companies operating in eastern seaboard territory. A program known as "The Mystery Chef" broadcast is about to be launched, two weekly 15-minute periods on the air being tentatively planned for 10:30 to 10:45 each Wednesday and Friday morning beginning December 3 and extending through November of 1936.

The territory involved represents 6,000,000 active domestic gas meters. Companies serving more than 80 per cent of these have already agreed informally to participate in the cost and negotiations now under way affecting another 400,000 meters are expected to make the support nearly unanimous.

An Executive Committee on Radio representing participating companies and using the facilities of the American Gas Association, has carried the project through the preliminary stages. This committee held its first meeting on October 8 and determined to organize "Regional Advertisers, Inc."—a corporation formed on October 17 under the laws of the State of New York, and operating independently of the A.G.A.

Regional Advertisers, Inc., duly organized, is now in active supervision of all details related to the radio program.

Directors of the Regional Advertisers, Inc., consisting of the Executive Committee on Radio personnel, are the following: E. J. Boothby, Washington Gas Light Co., Washington, D. C.; F. D. Cadwallader, Boston Consolidated Gas Co., Boston, Mass.; H. H. Cuthrell, The Brooklyn Union Gas Co., Brooklyn, N. Y.; N. T. Sellman, Consolidated Gas Co. of New York; R. A. Malony, The Bridgeport Gas Light Co., Bridgeport, Conn.; H. D. Polhemus, Jersey Central Power & Light Co., Asbury Park, N. J.; J. A. Weiser, The Newport Gas Light Co., Newport, R. I.; J. H. Wells, Hornell Gas Light Co., Hornell, N. Y.

Officers of the organization are, N. T. Sellman, president; H. H. Cuthrell, treasurer; and Charles W. Person, secretary, with the executive committee of the board made up of Messrs. Sellman, Cuthrell and Malony.

Total meters necessary to start the plan have been set at 4,500,000—75 per cent of the total within the territory. Companies operating 81 per cent of the total meters had informally accepted the program and agreed to participate, on October 26—approximately 400,000 in excess of quota.

Formal contracts are now being circulated by Regional Advertisers, Inc. to the companies which have indicated their desire to participate. Consolidated Gas Co. of New York, largest single unit in the program (1,121,000 meters), signed its contract on October 26.

A total broadcasting and talent cost of approximately $116,000 is contemplated for the initial series of 104 broadcasts, extending from December 3, 1935 through November 26 or 27, 1936. Each participating company is agreeing to pay 2½c per domestic meter in service, making quarterly payments in advance. Operations of course are on a non-profit basis, and Regional Advertisers, Inc., at the termination of the program will refund any excess funds in proportion to the original participation of each company.

The gas product will be popularized under the name of "The Mystery Chef". Talent to be used in the program will be John Macpherson, who has broadcast under the name of "The Mystery Chef" for the past several years under sponsorship of the Davis Baking Powder Co., building up a large following.

Distribution of a 96-page, four-color-cover recipe book entitled "Be an Artist at the Gas Range", is an integral part of the program, to be used as a check-up on program appeal and also to build up the story of modern gas service in the home. Use of the book will be restricted to participating companies. The recipe book formerly distributed in connection with the MacPherson broadcasts is already known to millions of housewives, and it is confidently expected that the new "Mystery Chef" recipe book, prepared expressly for the gas program, will be in high demand. A first run of 300,000 copies is planned, selling at 4c a copy to participating companies. Initial orders placed for the books must call for a sufficient number of copies to cover 5 per cent of each company's domestic meters.

Programs will go over the split red network of the National Broadcasting Co., covering Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania (eastern half), Rhode Island, Vermont, and Washington, D. C.

Regional Advertisers, Inc. will promote an extended network for rebroadcasting the "Mystery Chef" program as soon as the broadcasts are under way in the eastern seaboard territory.

More Thought to the SALES FLOOR

. . . It Pays In New Orleans

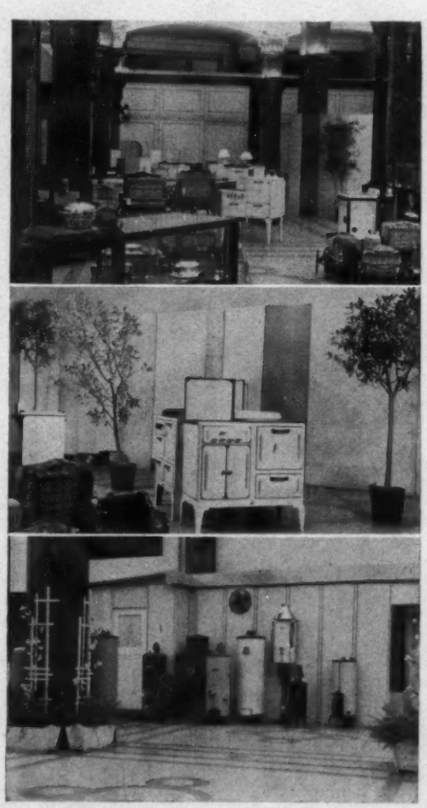
By GEORGE H. FINLEY Editor, Western Gas

MANY utility companies, reasonably well equipped with sales floor and window display space, are getting low return upon their investment in these facilities. Gas companies are more open to criticism on this score than electric, for the latter have a deserved reputation as merchandising showmen.

Of course the above generality does not apply to a select few of the large metropolitan gas companies, which have put their display practices and sales floor tactics upon a plane fully comparable to the best that the electric industry has developed. But it is true in far too many cases, and usually the explanation is simply that management policy has not accorded sufficient recognition to this very important phase of selling.

A short time ago the writer had an opportunity to inspect the sales floor of New Orleans Public Service Inc., and to discuss with executives in charge, the policies which are governing them in making use of the unusually complete merchandising set-up available at Public Service headquarters. There are suggestions in the following report which can be put to use with profit on other sales floors.

In New Orleans the utility is aggressively in the gas and electric appliance merchandising business, both as regards its direct selling effort and its complete plan of coordinated dealer sales development. Being in the sales field "with both feet" the company takes the logical stand that it should do a real job in every department—a job which will be recognized by dealers in its territory as an example of good selling which can be patterned after. This attitude extends to the sales floor, with the result that an exact procedure has been outlined and responsibilities properly allocated for making the first floor at company headquarters known as one of the livest merchandising spots in town.



Frequent change in floor arrangement, good lighting, good housekeeping, departmentalizing displays, are among guiding policies for New Orleans sales floor, three sections of which are seen above.

The sales floor staff have a splendid background for their talents in the spacious floor arrangement at Public Service headquarters, the floor being 130 feet long, by 75 feet wide, with a 20-foot ceiling. As the customer enters the building he is impressed with the massive columns and arched ceiling which are the dominant notes in the interior design. The ceiling is light in color, brilliantly illuminated by indirect lights on the columns. Small appliance booths, well lighted, are located on the right hand wall upon entering. These extend behind a main sales counter, which is in direct connection to the credit department, stock and delivery department. Continuing further on this side is the repair counter, where small appliances are received for repairs. This department is in direct touch with the testing laboratory, in the basement beneath.

Sales Force

The floor sales force consists of four regular salesmen, one supervisor, one model kitchen demonstrator, and three salesmen from the residential sales force of outside representatives. The company employs 35 of the latter, divided into three groups, and each group has one of its men on the sales floor each day. The result is that every outside salesman comes onto the floor about every 11 days.

In rotating the outside men on the sales floor several purposes are served. The men gain current and first hand knowledge of the new appliances, and their customer tactics may be developed under close supervision—something that is not so easily possible in the field. The plan has been used for about a year, and already is regarded as the most valuable element in the men's sales training, both as to their schooling in definite methods, and in building their initiative.

Regular floor salesmen are paid a definite salary, while the outside men operate on a guarantee based upon the earned annual revenue of equipment sold. Above the $150 guarantee there follow commission inducements, also based on the e.a.r. of equipment sold, and so aranged as to give proper incentive to surmount each succeeding step in the scale.

Outside salesmen and floor salesmen alike are offered bonuses additional to the above compensation, during special campaign periods—and the New Orleans company is a believer in the campaign method. During a recent range campaign, for example, a $3 bonus went with every insulated range sold.

As the outside salesmen come onto the sales floor they are assigned, one to refrigeration, one to water heaters, one to ranges. For sales concluded on the floor they get one-half the e.a.r. compensation (on refrigerators and water heaters), the other half going to the territory representative in whose area the appliance is delivered.

So much for the sales floor facilities and the personnel set-up. Now for a

few of the general policies which guide in the routine operation of the floor:

Floor Management Policies

Departmentalizing: In the first place, those in charge at New Orleans believe in departmentalizing the sales floor. Space is allotted in each changing floor arrangement so as to (1) feature prominently those items being used in current campaigns, (2) place emphasis on items of special sales appeal, and (3) give proper weight to seasonal appliances.

Visibility: Another dominent objective is good visibility, floor lighting and appliance placement being handled to yield the best possible results in this direction.

Pricing: Policies concerning pricing have been given much thought in connection with merchandising off the New Orleans sales floor. One standing order is that every appliance shall bear a price ticket, and the price tag now in use is worth a word in itself. As the prospect steps up to each appliance he sees a small tag featuring a "1c" symbol, and bearing the message that "This appliance will serve you ..... hours for 1 cent." On the reverse side is supplied the full information on cash price, down payment, payment period, amount of monthly installment, and term price. Also, the company's stock number is on every appliance tag, as well as the date on which the appliance went onto the floor.

Care is taken to eliminate all "bad" prices; that is, an item will be priced at $89.75 in preference to $90; or rather than give a "round" price the item will be marked up 50 cents. Good merchandisers hold that prices just above a popular price or a "round" figure are regarded as "up" prices by the public; hence such prices as $91 or $92 are avoided.

Display: The display function also receives a large share of attention in the sales floor program. Fresh window and floor displays with frequent change of arrangement and materials are called for. All large appliances, as well as display cases and display tables, occupy the bulk of the floor. Associated appliances are grouped together in attractive settings—never in unbroken rows. Suitable backgrounds and "selling signs" complete the groups. Live shrubbery is used plentifully. A central aisle is maintained, but seasonable or campaign items are forcibly brought to the customer's attention by being placed in the center of the aisle. Other aisles are naturally formed by appliance groups.

Three general functions come under the sales floor supervision—floor sales, merchandise buying, and display—and none of the three is neglected. Good housekeeping is another item which goes hand in hand with fresh display, in producing a live and attractive floor.

Stock Control: A policy of close stock control is followed. Buying is done in small quantities, and nothing is carried longer than six months. When special items are to be moved, due to being in stock longer than desired, the company does not believe in giving all the price advantage to the customer. Enough margin is retained to give the salesman an extra inducement to move the particular appliance, and this policy has proved out in practice. To cite one instance, a range which had been in stock too long was cut in price and still failed to turn. A $5 bonus offered to the salesman on this item got immediate results.

New appliances, or models of established lines which have added new features, are put through tests to determine their operating characteristics and the salability of new features, before they go onto the floor.

Personnel Management: Delegation of responsibility is the key to most productive use of floor sales personnel, in New Orleans experience. Each of the regular sales force has his own department, and is encouraged to regard it as his special sphere of the business. Thus one is responsible for appliance arrangement, another for condition of merchandise, and another handles details connected with pricing. An enthusiastic interest is thus developed, which could not be secured if unrelated duties were assigned.

Massive columns and arched ceiling lend impressiveness to the spacious New Orleans sales floor. Dimensions are 130 ft. length by 75 ft. width, with 20 ft. ceiling.

Also under the head of personnel management comes a "Salesman's Check-Up Chart," introduced by J. R. Guidroz, supervisor in charge of the New Orleans Public Service sales floor. This check-up chart is submitted weekly to the regular floor salesmen, and also to each outside sales representative as he comes onto the floor periodically. Its consistent use, it is felt, will tend to keep the individual salesman thinking in terms of his job and how to improve himself in it. For the interest it contains the chart outline is reproduced below:

SALESMAN'S CHECK-UP CHART AS APPLIED TO SALES FLOOR IN PARTICULAR

(Please sign check card and return)

Selling

1. Do I radiate enthusiasm?
2. Do I use a pleasant, a helpful approach?
3. Do I know my merchandise?
4. Do I keep in mind seasonable gift suggestions?
5. Do I keep in mind new or novel appliances to interest prospects who are "just looking around"?
6. Do I try to close again and again?
7. Do I suggest something else?

Floor Procedure

1. Do I feel true responsibility for my own "department"?
2. Do I make suggestions based on my experience and contacts on the sales floor?
3. Do I "promote" the Model Kitchen?
4. Do I leave the sales floor when other sales people have already left; or, when the floor is otherwise short-handed?
5. Do I tend to group with other sales people or with employees in idle conversation?
6. Do I do just what told and not a bit more?

Attitude

1. Am I "friendly"—a "helpful" salesman?
2. Am I intensely interested in my work?
3. Do I realize the service I am rendering through my company?
4. Do I realize that if I stand still I am really slipping back?

Personal Characteristics

1. Am I 100 per cent alive and alert? Do I know what is going on all the time?
2. Do I know how to smile?
3. Am I courteous? Tactful?
4. Do I speak correctly?
5. Am I careful about my personal appearance?
6. Do I study and try to understand human nature?

(This is *your* check—for *your* benefit. Such checks have *worked for* others who *worked* the check. Don't forget—"There's always a Better Way.")

Model Kitchen: Before closing this description of the New Orleans sales floor and its operation a word on the model kitchen, located to the rear of the floor, is in order. Traffic through the kitchen is built up by advertisements, signs just inside sales floor main en-

(Continued on Page 55)

Wyoming-Nebraska Pipe Line Nears Completion

NORTH Central Gas Co.'s 217-mile natural gas pipe line from Clayton, Wyo., to Lewellen, Neb., is now back on its original construction schedule after having been delayed due to unharvested beet crops in certain Nebraska fields. Completion of the line is expected about December 1.

The project calls for 65 miles of 12-inch pipe, 56 miles of 10-inch, 9 miles of 8-inch, 18 miles of 6-inch, 24 miles of 3-inch and 45 miles of 2-inch. The line route is shown in a map published in *Western Gas* for October, Page 45.

Work on the 12-inch section, from Clayton to Guernsey, Wyo., was begun on August 25, and will be completed November 10, this section consisting of all new plain end Republic pipe. On October 5 another crew at Guernsey started working eastward to Mitchell, Neb., on the 10-inch section. A third main line gang started from Bridgeport, Neb., October 20 on the final span to Lewellen which is made up of 3- and 2-inch pipe. General contractor for the project is Williams Bros., Tulsa, Okla. Williams Bros. has employed 250 men, mostly recruited from local labor.

The 56 miles of 10-inch pipe was reclaimed from a North Central Gas Co. line between Casper and Salt Creek, Wyo. It was reconditioned, cleaned, and primed with No-Ox-Id paint at the company yards, at Casper. The 18 miles of 6-inch pipe was reclaimed from oil line extending from Casper to Bolton Creek, the collars being cut and trimmed with oxy-acetylene and the line given the same protective treatment as the 10-inch. A WKM cleaning machine was used in the cleaning process. The line is composite throughout, two 40-foot lengths being welded together, with Dresser couplings at 80-foot intervals.

Eight-inch pipe is used between Mitchell and Scottsbluff, 6-inch between Scottsbluff and Bayard and 3-inch between Bayard and Bridgeport.

Uneven terrain necessitated a great many pipe bends, which were made cold with tractors, and along the route of the 12-inch section two bending gangs were required to keep ahead of the construction gang. Depth of the backfill is over 30 inches throughout.

The Platte River is crossed twice, once by the 12-inch section near Clayton and again

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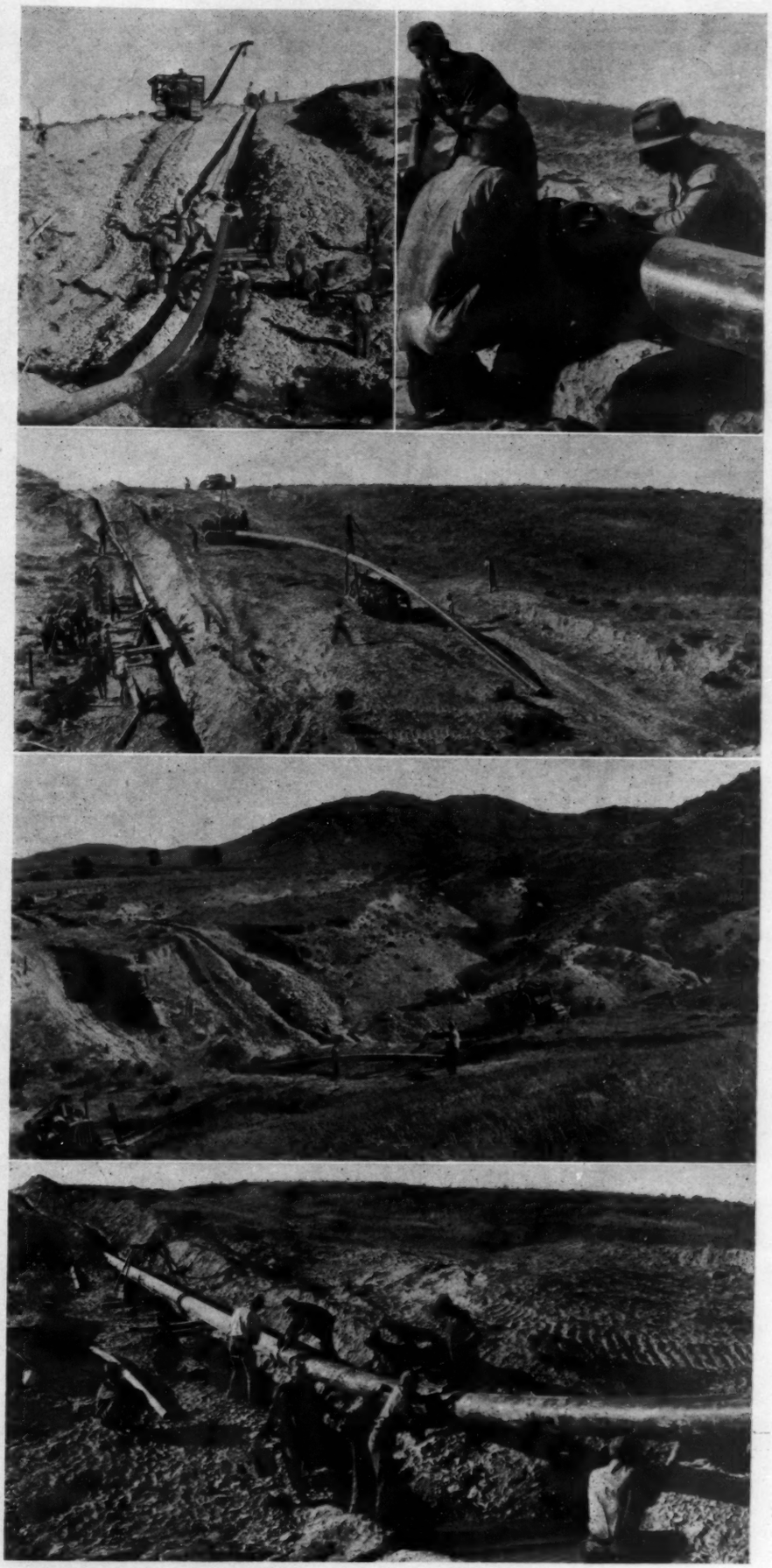


● Views at the right show construction operations along the route of North Central Gas Co.'s pipe line, now building between Clayton, Wyo., and Lewellen, Neb. (Photographs courtesy of S. R. Dresser Manufacturing Co.)

GOVERNMENT IN BUSINESS and the NEW DEAL

(Who Started It and Why)

By E. F. McKAY

Manager, Oklahoma Utilities Association, Oklahoma City, Oklahoma

FEW citizens have any conception of the extent to which the federal government has entered into competition with private business. If activities of municipalities be included the number of lines in which citizens are attempting to survive public competition is beyond enumeration.

E. F. McKAY

As a result of an investigation authorized by the Federal House of Representatives in 1932, it is possible to present substantial evidence on the extent of competition of the federal government with its citizens. Plans for a government operated cafeteria in the new Kansas City post office prompted a protest by the Kansas City Chamber of Commerce in 1931, as a result of which representative J. B. Shannon of Missouri was made chairman of a committee of five, appointed by the Speaker of the House, to investigate activities of the government in business and report. Mr. Shannon found that the Kansas City Federal Reserve Bank was competing with other office buildings by renting space, and with eating houses by operating a restaurant. The Shannon committee found plenty of justification for the plank in the 1932 Democratic platform on which the present administration was elected, demanding "removal of government from all fields of private enterprise except where necessary to develop public works and natural resources in the common interest."

The committee reported in February, 1933, listing 41 lines of industry embracing more than 225 subdivisions of trade, industry and personal and professional services in which the government was actually competing with private citizens, including the following:

The War and Navy Departments were manufacturing uniforms, clothing of all kinds, leather, saddles and harness goods.

The War Department was operating mercantile establishments, laundries and dry cleaning and dyeing establishments at its posts and reservations.

The Navy Department operated stores aboard ships in dock, and commissaries and laundries in navy yards and produced paints and varnishes for itself and other departments.

The Government Printing Office manufactured ink, paste, mucilage, blank books and similar articles.

The Census Bureau manufactured and repaired computing and tabulating machines.

The government was operating transport service to the Canal Zone by ownership of the Panama Railroad Co.

Barge lines and warehouses were operated on the Mississippi and Warrior rivers in competition with private facilities, and the parcel post had all but supplanted the express companies.

Shoes, brushes, cotton cloth, tents, automobile tags and other articles were manufactured in federal prisons and sold in competition with private enterprises.

Timber from Indian lands and forest reserves was sold by the government in competition with the lumber industry.

The Federal Farm Board was financing the operations of farm cooperatives in competition with grain, cotton, livestock, wool, hay and dairy-product brokers and buyers.

The Post Office Department was receiving and paying interest on deposits in competition with private banks, and sold millions of printed envelopes daily in competition with job printers everywhere.

The Shannon committee report indicated that government competition with private enterprise threatened "to reduce private initiative, curtail the opportunities, and infringe upon the earning powers of tax-paying undertakings while steadily increasing the levies upon them."

TVA and EHFA

The program of government competition with private business in the manufacture and sale of electric appliances through the Electric Home and Farm Authority in connection with the Tennessee Valley experiment is well known.

To what extent the EHFA program is supplanting existing business is uncertain. The Authority disclaims the purpose to either manufacture or sell equipment and appliances, but its relation with the manufacturers makes it the manufacturer in fact if not in name. A press release of this Authority, so recent as August, 1935, states the intent of EHFA to finance retail sales of electrical and plumbing equipment and appliances in cities and rural areas and estimates that in these areas alone there will be sales, directly or indirectly attributable to government operation, totaling more than $350,000,000. What the total volume of sales may be, including the cities and towns, where practically all the sales have been thus far, no calculation has been announced. This program is proclaimed as one of expansion. The fact remains, however, that it is a governmental and not a private business project, and one with which private business cannot compete. And, since the campaign is directed chiefly to the sale of ranges, refrigerators and water heaters, it is clear that it will, if successful, have a disastrous if not ruinous effect upon the established gas as well as electric appliance business in the territory where the campaign is now being put on, or any other territory which in the future the governmental agency may decide to invade.

The TVA competes with business also in production and sale of fertilizers, in inland waterway navigation, the mining of phosphate ore, construction and renting of homes, free use of farm plots to tenants, and the organizing and financing of cooperative associations. Through the operation of the TVA plan the bituminous coal industry faces the most serious competition in its history. Protests of the coal and labor interests against this government competition are supported by railroads and

railroad labor, declaring that TVA operation will replace the use of 6,000,000 tons of coal a year, the transportation of which would represent $12,000,000 in traffic revenue with annual loss in railroad payrolls of $6,000,000, and an equal amount in wages of mine employees.

The Federal Surplus Relief Corp. has dealt extensively in foodstuffs and announced plans to purchase cotton and ticking and to manufacture mattresses and quilts for the unemployed.

Most far-reaching of all the federal government activities in competition with private business are those in the field of finance. It is impossible in the present article to mention, much less to detail, the activities of the government which are revolutionizing, if not supplanting, the business of financial institutions of every kind. Most of these financial undertakings are recognized as emergency measures to supply financial services that regular business agencies were held to be, at least temporarily, unable to provide. When, or to what extent, however, the emergency which has been held to justify these measures may be considered as having passed is a matter of great uncertainty but of vital importance.

It is impossible to overlook the fact that where, because of government competition, private business is permanently crippled or extinguished, the government activities may be expected in the nature of things to become permanent. President Coolidge spoke advisedly when he declared that when the government enters into a business, private interests must step out, because no private business can long endure in the face of government competition. The public agency does not have to pay its own way. It gets advantages of lower transportation costs, free use of the mail, accountir.g methods which private business cannot use to conceal true results of operation, not to mention availability of the resources of the public treasury to supply funds which operation may fail to produce.

Thomas A. Edison once said:

"There is far more danger in public monopoly than there is in private monopoly, for when the government goes into business it can always shift the losses to the taxpayers. It can pretend to sell power, for example, cheaper than private industry, and then cover up its losses. The government never really goes into business, for it never makes ends meet, and that is the first requisite of business. It just mixes a little business with a lot of politics, and no one ever has a chance to find out what is actually going on."

Public competition with private business has written a sorry chapter into the history of most of the states that have permitted themselves to be put into business in competition with their citizens. State ventures into industry have included banking, milling, grain elevators, home building, creamery operation, rural loans, guaranty bank deposits, cement manufacturing, coal mining, insurance, gasoline stations, canal operation, water power, stockyards, marketing agencies and many other lines of business, each of which was thereby made less profitable, if not closed, to private citizens.

One investigator has listed bonds to the amount of about $152,000,000 repudiated by 11 states, representing debts incurred for governmental business ventures in competition with private business.

In the municipal field the most important form of government competition with private citizens lies in the ownership and operation of public utilities, chiefly electrical. Municipal electric plants, that serve about 10 per cent of the users of current, supply about 5 per cent of the electricity used. In the manufactured gas industry municipal plants produce not to exceed 2 per cent of the total output, while in the natural gas branch of the industry the municipal factor, in point of volume, is still less important up to the present time. One of the latest and hardest "wallops" against the natural gas industry is the very recent PWA allotment (in August) of $186,800 for a transmission and distribution system at Las Cruces, N. M., a town of 5,811 population.

It has already been said that the vast program of government competition with private business had its inception in the minds of political agitators. Public utility executives were compelled to take defense measures, one of which was the organization about 15 years ago of company departments and inter-company committees and associations, state, regional and national, to acquaint the public served by the utilities with the facts concerning the nature and operation of the various industries.

This movement on the part of the industry was recognized by radical groups and individuals in politics, local, state and national, as offering a vulnerable point for attack. As a result, Senator Walsh of Montana, now deceased, introduced in the United States Senate in 1927 a resolution, known as the Walsh Resolution for investigation of the conduct and practices of public utilities. The resolution called for a special committee, the natural assumption being that the author of the resolution, Senator Walsh, should be chairman of the investigating committee. It was common belief that Senator Walsh had offered his resolution having in mind that, following the Teapot Dome investigation of which also he was the author, he might reasonably be the next nominee of the Democratic Party for President of the United States. Other senators, recognizing the alleged strategy of the move, countered with an amendment to the resolution providing that the proposed investigation should be conducted by the Federal Trade Commission, which amendment carried, and threw the investigation into the established governmental agency where it logically belonged. Significantly, Senator Walsh manifested little further interest in the project.

The Federal Trade Commission began its investigation early in 1928 and today, after seven years and hundreds of millions of words of testimony, is still at it. For two years the commission took testimony as to the activities of the utilities, particularly with relation to publicity and so-called propaganda practices. The utilities were promised their day in court, and after patiently subjecting themselves to interrogation and investigation, including months of delving into utility company files and records of every description by

(Continued on Page 38)

WESTERN GAS for October introduced the first of two articles under this head of "Government in Business and the New Deal: Who Started It and Why". In the original article Mr. McKay laid the scene for his present review of specific governmental activities which compete with private business. Historical beginnings of the Socialist movement, surveyed in the first article, are herein brought down to 1935 and the New Dealers. Every utility reader should know the facts which Mr. McKay has compressed into this valuable study, concluded this month.—EDITOR.

TABLE NO. 1. COMPOSITION OF METAL USED IN SAFETY PILOTS.

Designation Part	A Gasket	B Seat	C Groove	D Valve	E Body
Cu	99+		66.00	61.2	63.5
Zn			32.12	36.2	34.0
Pb			1.50	2.12	2.5
Sn			0.24	nil	
Fe			0.07	.07	
Resistance	Poor		Fair	Excellent	Excellent

Corrosion Resisting Materials for Gas Appliances Subject of Study

• A. L. WARD and W. H. FULWEILER, United Gas Improvement Co., Philadelphia, Pa.: addressing Technical Section, American Gas Association, at Annual Convention, Chicago, Ill., October 14-17, 1935. (Abstract by WESTERN GAS)

A STUDY was made of the corrosion resistance of copper base alloys when exposed to city gas at ordinary and slightly elevated (up to 275° F.) temperatures, to find an alloy that would be resistant to corrosion, and more readily machined than aluminum, for use in regulating devices of consumers' appliances. The corrosive constituents in the gas are organic sulphur compounds, together with traces of hydrogen sulphide. The corrosion appears as a fine black scale or dust which is mainly cuprous sulphide, and seriously interferes with the functioning of carefully machined devices such as safety pilots and thermostats.

A survey was made of samples of safety pilots from 13 companies distributing gas mixtures that varied from 100 per cent coke oven or coal gas to 100 per cent carburetted water gas. Fig. 1 shows a cross section of a safety pilot and Table No. 1 the composition and corrosion resistance of the various parts as indicated in Fig. 1. It is seen that the copper gasket was the most susceptible, and the brass with the lowest copper content practically immune from attack. When the copper gasket was replaced with aluminum the difficulty was solved. A number of thermostats were also examined, wherein brass containing 82.88 per cent of copper was attacked while brass carrying approximately 60 per cent copper had not suffered corrosion.

To check these observations, and examine all available alloys, a comprehensive series of tests were made, using 93 samples of copper base alloys varying from 55 per cent to 99 per cent copper, together with four samples of aluminum and three of stainless steel. These were cut in strips and subjected to various gases at controlled temperatures. The gases varied from 5 to 16.5 grains of organic sulphur per 100 cu. ft., with hydrogen sulphide from 0.005 to 0.04 grains per 100 cu. ft.; temperatures varied from that of the room, up to 275° F.; time of exposure varied from 24 hours to 90 days. These tests substantiated the findings of the field survey, and it is generally concluded that, from the standpoint of availability, reasonable cost and ease of working, alloys containing less than 63 per cent copper are satisfactory, and are almost perfectly resistant to this type of corrosion. They are improved still further by the addition of 1 to 2 per cent of either lead or aluminum.

A further investigation showed that tubes of similar alloys are, however, distinctly less resistant, the difference being due, apparently, to some surface condition set up by the drawing process. This can be corrected by internal mechanical polishing but the latter process is not commercially practicable. Aluminum tubing is therefore recommended. In cases where aluminum tubing would be subjected to corrosion from alkaline insulating materials, a tin plated tubing, or a bimetallic tubing with aluminum on the inside and brass or copper on the outside, would be appropriate.

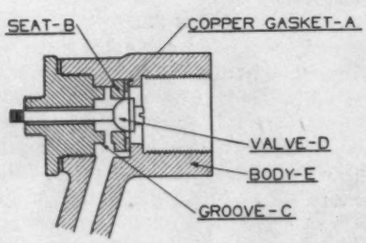


FIG. 1. Cross section of safety pilot.

Analysis of Completed Leak Orders

• OSCAR COOK, in report to Pacific Coast Gas Association Annual Convention, Pasadena, Calif., September 17 to 19, 1935—(Abstract by WESTERN GAS).

DURING the years 1930 to 1934, inclusive, the Los Angeles Gas and Electric Corp. completed an annual average of 46,000 leak orders, classified as follows: meters, mains, services, regulators, house pipes, appliances and "no leaks." The average annual sub-total of the last two divisions, appliances and "no leaks," was 39,600.

During the winter period of November 27 to December 31, 1934, an analysis was made of 2,384 completed leak orders, including 1,434 received by dispatchers of the distribution department and 950 received by clerks in the main or branch offices and telephoned to the dispatchers for completion. A summary of the analysis is given in Table No. 1.

A study was then made of 351 leak orders which sought to differentiate between actual leaks and appliance adjustment requests, in that when the customer requested leak service, the dispatcher made an attempt to determine the extent of necessary emergency service, marked N/N, if not necessary, and then dispatched the order in the regular manner to a non-emergency routeman. This study disclosed the following:

	Number	Per Cent
No leak	112	32
Too small to register	116	33
Measurable	123	35
Total	351	100

It was thus disclosed that approximately 65 per cent of the leak orders received by dispatchers do not require emergency service.

Considering an emergency call to cost $1, and a routeman call to cost $0.70, the annual average saving obtained by treating the 25,740 non-emergency calls (39,600 x .65), as routeman calls, would be $8,722.

However, it is reasonable to expect that this total saving would be increased at least 25 per cent, inasmuch as the emergency crews, in the winter, will

TABLE NO. 1.

	Received by Dispatchers		Received by Main & Branch Offices		Total Received	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
No leaks	450	31.3	391	41.2	841	35.3
Too small to register	384	26.7	266	28.0	650	27.3
Measurable	600	42.0	293	30.8	893	37.4
Totals	1434	100.0	950	100.0	2384	100.0

issue Regulate Orders rather than be held up on appliances that can be adequately completed at a later date. In other words, it is possible, dependent upon the season, that each request may require two calls, a leak and a regulate order, to complete at an approximate cost of $1.70.

In view of the results obtained from these studies, it was recommended that the following procedure be adopted:

Create Leak Departments to determine, by proper questioning, the condition and location of apparent leaks before dispatching emergency service crews. If determination shows emergency service not necessary, these orders should be dispatched to assigned routemen for completion.

Relieve main or branch office clerks of any Leak responsibility. If consumers would not be satisfied by the issuance of Regulate Orders, the clerks would refer the consumers or transfer the call direct to the Leak Department for completion of the request.

Leak Orders would be dispatched with assigned routemen only when it is known that they would be completed within a period that would be interpreted as prompt service; that is, within 2 to 3 hours, the same day.

Make occasional cross-sectional checks of leak orders completed by routemen.

These recommendations were carried out, and an analysis of the present procedure shows the following results:

Has increased daily production of former emergency men, now assigned as routemen, from 50 to 70 per cent in orders completed.

No difficulties have been encountered in completing orders by routemen.

Rare case where routemen could not complete order at time of call.

Production of routemen has not suffered by this procedure. Increased production between 3:00 and 5:00 p.m.

Leak orders are completed, with minor adjustments, in an average of one-half hour per order.

No criticism has been received from consumers on routemen's work.

Orders are completed sooner, after dispatched, by routemen than by emergency crews. Smaller areas to cover by routemen and fewer leak orders to complete per man, explain this condition.

Minor leaks are completed by routemen, on an average, in 2½ hours from time of receipt by dispatcher to the time of completion. Rush or hazardous orders are completed within the hour.

Only in rare cases did consumers resort to expedient of ordering leak complaint to obtain immediate service.

No hazardous orders have been completed by routemen.

Dispatchers are cooperating fully with routemen, giving as near the exact condition as it is possible to determine from consumer.

Leak orders in apartments are dispatched to routemen who complete same if they ascertain the leak to be in individual apartment or in fittings near meters. If leaks are not immediately located, dispatcher is notified, who advises necessity of standing by until repair crew arrives.

There have been practically no repeat calls since the routemen have been dispatched with leak orders. The practice in the past was to issue regulate orders, if additional work was necessary. which was completed by another man at a later date. However, the present procedure requires that the same man complete any second order and has virtually eliminated the second order.

Modified Carbon Monoxide Indicator for Analysis of Combustion Products

● **N. K. SENATOROFF, Los Angeles Gas and Electric Corp., in report to Safe Gas Distribution Sub-Committee, Technical Section, Pacific Coast Gas Association Annual Convention, Pasadena, Calif., September 17 to 19, 1935—(Abstract by WESTERN GAS).**

EVERY year a greater need for accurate analysis of small quantities of carbon monoxide in combustion products is being felt by the gas engineer, because of the increasingly vital part it plays in the adjustment of gas appliances. A careful analysis of the needs of the test were made, which resulted in setting up the following specifications:

(a) High accuracy in the range of 0-0.01 per cent "CO" content of combustion products.

(b) Capacity for analyzing a large number of samples per day.

(c) Freedom from the personal equation of the operator.

(d) Portability — so that tests for carbon monoxide could be made on the premises of the consumer.

To meet the above requirements one of the Mine Safety Appliance Co.'s Continuous Carbon Monoxide Indicators was modified as follows:

1. Chemical

(a) Preliminary observations made it clear that the principal problem of modification to be solved was the development of an efficient absorber for carbon dioxide. Combustion products containing carbon dioxide in excess of 2 per cent seriously interfere with performance of the chemicals intended for carbon monoxide oxidation, thereby reducting their useful time of operation between recharging of the instrument. The presence of carbon dioxide in the gas also lowers the sensitivity of the indicator, especially in the lower range of the scale, where it is of the utmost importance.

Carbon dioxide is a very difficult gas to remove from a rapid gas stream unless one uses solid absorbents. With a liquid absorbent in an ordinary bubbler, strong alkali and low rates of aspiration are necessary to absorb all the gas. In the case of M.S.A. Indicator, the rate of gas flow through the instrument is fixed at approximately 9 cu. ft. per hour, thereby eliminating the use of liquid absorbents entirely. After considerable experimentation with solid sodium hydroxide, soda asbestos (commercially known as "Ascarite") and soda lime, the latter was finally adopted for the carbon dioxide remover. The efficiency of the absorber was determined in terms of the thickness of the soda lime bed and the carbon dioxide concentration.

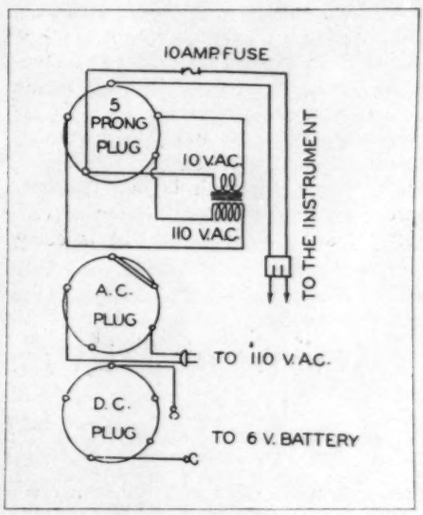


FIG. 1. Wiring diagram to modified indicator.

Two years' experience in the testing of combustion products indicates that samples seldom exceed 2.0 to 3.0 per cent carbon dioxide. The capacity of the absorber has been calculated on the basis of 5.0 to 6.0 per cent carbon dioxide, thereby insuring about 100 per cent factor of safety. The absorber was built in the form of "U" tube made up of 1½-in. pipe open return bend of

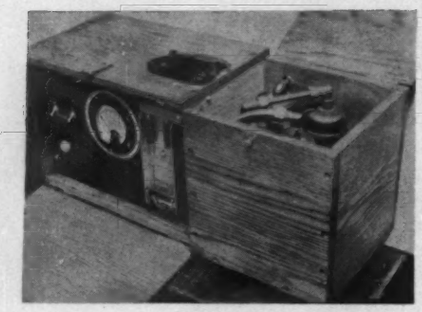


FIG. 2. Carbon monoxide analysis apparatus assembled in wooden case.

malleable iron, 2½ by 6 by 3-in. pipe nipples properly capped.

(b) The dehydrating canister for the removal of moisture was designed by the manufacturers to operate continuously for a period of 24 hours in the atmosphere saturated with water vapor at 70° F. In modification of the instrument it was felt that additional outside dehydration was necessary in order to allow the operator of the instrument to sample flue products saturated with water vapor at much higher temperatures, when for instance sampling directly from an appliance that is being tested. The "U" tube, identical in construction with the tube described for carbon dioxide absorber is being used as an outside dehydrator. Calcium chloride constitutes the dehydrating medium.

2. Electrical

A schematic drawing of the wiring adopted in the modified instrument is shown in Fig. 1. A small transformer permits the use of either a 110-volt alternating current or a 6-volt storage battery for the power of the instrument. A single outlet (5 prong plug) with 2 sets of leads makes possible the use of the instrument on either source of power.

3. Mechanical

With the addition of carbon dioxide removal, with extra dehydrating facilities and the use of transformer it was felt necessary to enclose the entire assembly in a wooden case for convenience of transportation. The case measures 20⅝ inches by 9⅛ inches in height by 8 inches in width and is shown assembled in Fig. 2. The set-up has provided a very compact piece of equipment, which is easy to transport and convenient to use.

Review of 17th A. G. A. Convention

(Continued from Page 16)

turers group. Mr. Berghorn has resigned his connection with the A.G.A. for which he has served as secretary of the Manufacturers Section and Industrial Gas Section. He has staged the A.G.A's outstanding convention exhibits for a number of years.

George E. Frazer of Frazer & Torbet, Chicago, who served as counsel for Gas Appliances Institute has been elected counsel of A.G.A.E.M.

Numerous product divisions have been formed and other divisions are in process of formation. Each will have representation on the Board of Directors, which now consists of the association's duly elected officers and the chairmen of the several divisions. Organization of the divisions to date stands as follows:

Domestic Gas Range Division

Chairman: I. W. Peffly, American Stove Co.

Vice-Chairman: Paul R. Tappan, Tappan Stove Co.

Executive Committee: W. Frank Roberts, Standard Gas Equipment Corp.; Roger A. Gordon, Roberts & Mander Stove Co.; R. B. Hurt, Hardwick Stove Co.; M. G. Klemme, Eagle Foundry Co.; E. R. Guyer, Cribben & Sexton Co.; Clarence Graham, James B. Graham Mfg. Co.; R. M. Leach, Glenwood Range Co.

Gas Water Heater Division

Chairman: R. J. Canniff, Pittsburg Water Heater Co.

Gas House Heating and Air Conditioning Equipment Division

Chairman: Lyle C. Harvey, Bryant Heater Corp.

Gas Conversion Burner Committee: Chairman—W. S. Gordon, Jr., Roberts-Gordon Appliance Corp.

Gas Boiler Committee: Chairman—Geo. L. Harberger, Eastern Foundry Co., Peerless Heater Co. Division.

Gas Space Heater Division

Chairman: J. S. Drillette, Peerless Mfg. Co.

Vice-Chairman: R. F. Cleary, Homestead Heater Co.

Executive Committee: George Humphrey, General Gas Light Co.; J. H. Sattler, Gaffers & Sattler Co.; E. C. Adams, Adams Bros. Mfg. Co.

Gas Refrigerator Division

Chairman: F. E. Sellman, Servel Inc.

Industrial Gas Equipment Division

Chairman: Frank H. Adams, Surface Combustion Corp.

Hotel, Restaurant and Commercial Gas Equipment Division

Chairman: John A. Fry, Detroit-Michigan Stove Co.

Vice-Chairman: C. H. French, Standard Gas Equipment Corp.

Executive Committee: Stanley Little, American Stove Co.; Carl E. Sommer, Majestic Mfg. Co.; W. H. Rudolph, Savory, Inc.

Gas Cock Division

Chairman: Earl W. Roberts, Roberts Brass Mfg. Co.

Thermostatic Control and Accessories Division

Chairman: H. A. Wilson, Wilcolator Co.

Vice-Chairman: Charles B. Sweatt, Minneapolis-Honeywell Regulator Co.

Gas Meter and Regulator Division

Chairman: W. P. Hutchinson, Sprague Meter Co.

Vice-Chairman: W. F. Rockwell, Pittsburgh Equitable Meter Co.

Executive Committee: Floyd Gaunt, Reynolds Gas Regulator Co.; Donald McDonald, American Meter Co.; John H. Walsh, Superior Meter Co.

Supplies Division

Chairman: J. J. Greene, Johns-Manville Co.

Gas Plant, Production and Distribution Apparatus Division

Chairman: F. G. Curfman, Improved Equipment-Russell Engineering Corp.

Office Equipment Division

Chairman: H. J. Johnson, Remington Rand Inc.

Advertising Costs of Gas Revealed in A.G.A. Survey

Publicity and advertising expenditures of 34 natural and 63 manufactured gas companies in 1934, as revealed in an A.G.A. survey, showed that the natural gas companies averaged 39.5 cents per customer or .6 per cent of gross revenue while manufactured gas companies spent an average of 55.7 cents per customer or 1.5 per cent of gross revenue. These expenditures were increases of 22.4 and 26.1 per cent respectively over 1933.

Most of the money in both cases was spent in newspaper advertising for new business promotion. Stated in terms of merchandise sales revenue, the advertising cost of natural gas companies was 10.2 per cent and of manufactured gas companies 7.4 per cent.

Gas-Blown Soap Bubbles Produce Excellent Outdoor Display

At a recent gathering of sales executives in Cleveland, Ohio, L. C. Porter, an illuminating engineer of that city, staged an exhibition of gas filled soap bubbles of all tints and colors. To a 10 per cent castile soap solution were added 9 parts of water. To the resulting solution 5 per cent of glycerine was added, and quantities of the mixture placed in several tubs around which were stationed a battery of spot lights of various colors.

Gas from the city mains was introduced into the tubs through ½-inch hose. As huge bubbles rose into the air to a height of some 1000 feet, the colored lights played on them, producing a fantastic spectacle.

Southern Union System Appliance Sales Increase

Throughout the system (11,635 meters) of the Southern Union Gas Co., headquartering in Dallas, Texas, a 10-day "Red Tag Appliance Campaign," September 19 to 30, sold over $122,000 worth of gas appliances. This figure is more than the total sales for the first five months of 1935.

The company's heating campaign that ran from August 1 to September 30 sold $163,355 worth of appliances, representing a 140 per cent increase over last year's drive.

Developing Commercial Baking Business

● G. J. KOLLOCK, Atlanta Gas Light Co., Atlanta, Georgia; addressing 1935 A.G.A. Southern-Southwestern Regional Gas Sales Conference, Dallas, Texas—(Abstract by WESTERN GAS):

IN PLANNING to secure the bakery load for gas, the gas company should consider that the baking industry has been using solid fuels for centuries, and reluctance to change must be overcome. Two general classes of customers may be considered, that will require different selling principles. First, the wholesale or chain store bakery, usually national in scope, where little sales effort will be required when the gas rate is in line with competing fuels. Second, the individual bakery, where gas rate is usually high on account of small consumption and where less ready capital is available for investment, so that the intangible value of gas must be stressed and the personal element of selling will play a large part.

A survey should be made to determine the potential load, location, capital investment and necessary rate to compete. Salesmen should be familiar with the entire baking business and capable of talking intelligently on it, and should be known personally to each baker. Gas fuel for bakeries should be advertised properly in trade publications, newspapers and direct mailing. Close contact should be kept with oven manufacturers to sell them also on gas fuel and therefore gain additional sales activity.

Old, antiquated and inefficient gas ovens should be replaced under all circumstances, as they offer a standing invitation to competitive fuels. A gas-designed oven sale is preferable to a conversion job, because of greater assurance of a satisfied customer with less service and sales effort to keep the installation sold.

Service calls should be made at regular intervals, and engineering studies instituted to improve the efficiency of operation. Two frequent causes for excessive gas consumption are over-ventilation and partially loaded oven operation.

Figs. 1 and 2 indicate fuel cost per thousand pounds of product for varying cost of different fuels. The curves are based on fuel cost only and do not include labor or other charges contingent in the overall firing cost of some fuels.

In general, it does not seem feasible to estimate the fuel consumption from the pounds of product on all types of ovens. Some of the methods in use by industrial engineers are:

For gas designed cabinet, deck, or small peel ovens operating with a good load factor, 657 B.t.u. per pound of product. Another method is to use an estimated percentage of the burner capacity over the hours operated. The maximum gas capacity for a good design is about 2,200 B.t.u. per hour per square foot of shelf or deck area.

For gas designed traveling hearth or tray ovens operating with a good load factor, 450 B.t.u. to 500 B.t.u. per pound of product. When operating 16 hours or longer per day the consumption will not likely exceed 400 B.t.u. per pound.

For other types of ovens converted to gas, 2,000 to 4,000 B.t.u. per square foot of hearth or tray area over the hours operated. A 10-foot by 12-foot indirect fired brick peel oven will average about 100,000 cubic feet per month of 1,000 B.t.u. gas. Using this figure as a gauge, a rule of thumb method is to adjust it to the job under consideration. Still another method is to estimate the gas required to replace the competitive fuel, taking the efficiency into consideration. The relative efficiency between gas and coke in an indirect fired brick peel oven is about 70 per cent and in an indirect fired portable peel oven 55 per cent. In order to have adequate burner capacity it is best to figure 4,000 to 5,000 B.t.u. per square foot of hearth on indirect fired brick peel ovens.

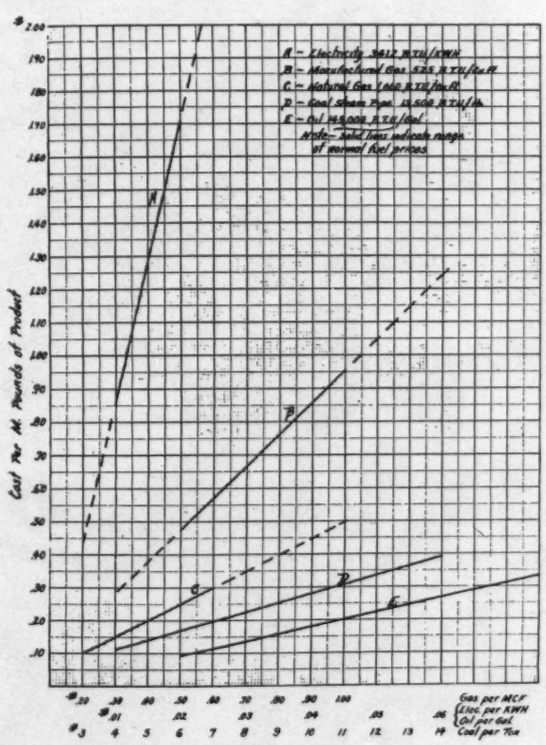

A – Electricity 3412 BTU/KWH
B – Manufactured Gas 525 BTU/Cu.Ft.
C – Natural Gas 1,000 BTU/Cu.Ft.
D – Coal Steam Pwd. 13,500 BTU/Lb.
E – Oil 145,000 BTU/Gal.
Note – Solid lines indicate ranges of normal fuel prices
Cost Per Hr. Pounds of Product
Gas per MCF
Elec. per KWH
Oil per Gal.
Coal per Ton

FIG. 1. Curves for indirect fired brick peel ovens showing fuel cost comparison.

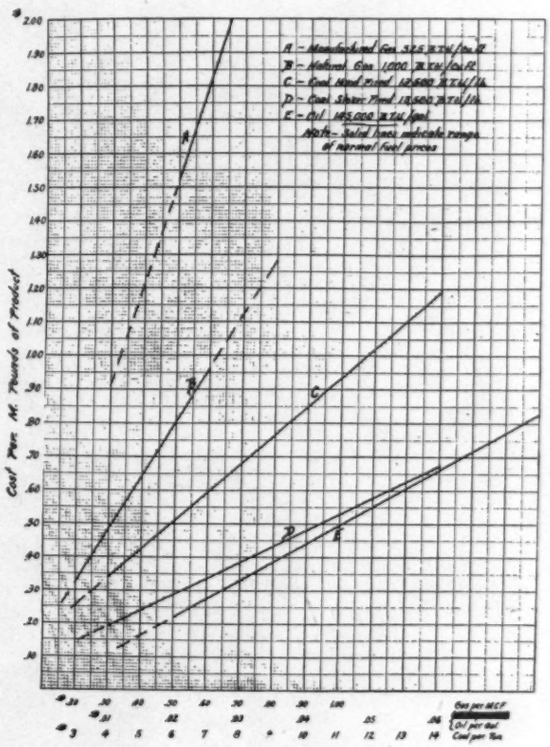

A – Manufactured Gas 525 BTU/Cu.Ft.
B – Natural Gas 1,000 BTU/Cu.Ft.
C – Coal Hand Fired 12,500 BTU/Lb.
D – Coal Stoker Fired 12,500 BTU/Lb.
E – Oil 145,000 BTU/Gal.
Note – Solid lines indicate ranges of normal fuel prices
Cost Per Hr. Pounds of Product
Gas per MCF
Oil per Gal.
Coal per Ton

FIG. 2. Curves for traveling hearth or tray ovens showing fuel cost comparison.

Lone Star Conducts "Heating for Health" Campaign

LONE Star Gas System, headquartering at Dallas, Texas, last month opened its "Heating for Health" advertising campaign, announced in the September issue of *Western Gas*. The initial ad referred to the common cold germ as "Public Health Enemy No. 1" and warned of the dangers to health to be found in poor ventilation and improperly heated homes.

The campaign consists of a publicity program including advertising copy, radio talks by physicians and a booklet outlining proper heating methods from the standpoint of health. Emphasis is laid on the importance of heating the entire home to prevent change in bodily temperature when going from one room to another, and of having a free circulation of air throughout the house. The booklet gives the answer to the question of "wall sweating" and explains the proper use of the types of gas heating appliances most frequently used by customers on the Lone Star System.

No equipment is advertised in connection with this educational program, the object being solely to acquaint the public with the proper use of gas service as a protection against colds.

The city health officer of Dallas and other prominent members of the Dallas Medical Association are to be guest speakers on a weekly 15-minute radio program. Questions and answers relating to colds and discussions of prevention measures will feature the broadcasts.

Display advertisements in more than 250 newspapers over the Lone Star System will stress better heating habits for better health, and the same theme is carried out in window and floor displays, on truck signs, gas bills and outdoor posters.

All employees on the system are being instructed on the ideas and aims of the campaign, which will extend to February 1.

Gas Customers Gain by 200,000 in Eight Months

MANUFACTURED and natural gas companies gained nearly 200,000 customers during the first eight months of this year, according to American Gas Association statistics, which also revealed that a total of 640,000 gas ranges were sold in the country during the same period. This is an increase of 30 per cent in range sales over the first eight months of 1934. Approximately 80 per cent of the sales consisted of relatively high priced ranges, incorporating modern automatic features, such as oven heat control, etc.

For the eight months ending August 31, manufactured gas industry revenues aggregated $252,652,900, practically the same as a year ago. Revenues of the natural gas industry were $229,736,700, or 7.6 per cent above the corresponding period of 1934.

As a result of increased costs during that year, particularly increased taxation, net income of the manufactured gas industry declined by more than 28 per cent, aggregating only $37,491,000. This represented a decline of nearly 57 per cent from the net income available for dividends and surplus in 1931. In that year 20.3 cents out of every dollar of operating revenue was carried down to net income, while in 1934 this figure had fallen to 9.9 cents.

Taxes paid by manufactured gas companies have shown a continued increase during the past few years. In 1929 taxes amounted to 9.3 per cent of the operating revenues of the industry, whereas by 1934 the rate had risen to 11.7 per cent. The total taxes of $44,416,000 paid by the manufactured gas industry in 1934 amounted to $4.50 for each customer served.

Gas Engine Alternated to Power Two Plants

MIDLOTHIAN (Texas) Oil and Gin Co., manufacturers of mixed feed and cottonseed products, operate several cotton gins in Texas, among these being one at Britton powered with an 85-h.p. skid-type natural gas engine. Since the engine is used only about four months each year during the ginning season, it was decided to move it at the close of the season to Midlothian to power the company's feed mill. The move was accomplished with three men and a truck, taking about six hours to move and set up the engine.

P. K. Griffin, Lone Star Gas Co., Dallas, Texas, industrial department engineer, suggested the alternate service idea as an economy measure to the gin company, which plans to use the engine regularly to operate both plants. This is believed to be the first instance of alternate service employing a gas engine in other than oil field operations.

International Petroleum Exposition Preparation Making Good Progress

Exhibit space for the 9th International Petroleum Exposition and Congress to be held at Tulsa, Okla., beginning May 16, 1936, is 86 per cent sold, according to W. B. Way, general manager. Exhibit facilities are comprised of a half million dollar plant on a 20-acre site. Ninety-two per cent of the outside space is sold and 81 per cent of the booths in the five exhibit buildings.

There will be about 1,500 firms represented by some $10,000,000 worth of exhibits, it is estimated. Upwards of 15 foreign countries are expected to participate.

Oklahoma Natural Business Increases

As of October 1, Oklahoma Natural Gas Co., Tulsa, reports an increase of 2,997 active meters over the same time in 1934, according to Thos. E. Bartlett of Oklahoma Natural. This figure is only 20 meters short of the company's all time peak.

Gas Facilities Unimpaired by Quake in Helena, Montana

THE SERIES of severe earthquakes that recently visited Montana did not impair gas service in Helena and no damage to any of the gas distribution facilities was experienced, according to word received by *Western Gas* from W. W. German of the Helena District of the Montana Power Co. Gas Department. Additional men have been brought in from other divisions of the system and are making a thorough check on each gas installation in the affected area. Mr. German states that tremors were still being felt on October 30 but were of diminishing frequency and intensity. Sub-zero weather following the quake is providing the greatest problem to the company in protecting damaged heating plants from freezing.

Wisconsin Public Service Corp. Educational Activities

WISCONSIN Public Service Corp. has comprehensive educational activities organized for the 1935-36 period which will reach every employee. Job training conferences will be conducted in practically every operating department. Within the gas department these conferences will consist of job training discussions for all divisions, analyzing the job of the gas service department. These will touch only the service end and will be practical analysis and discussion of the servicemen's work. Discussions will also be held with service departments, reviewing essentials of good public contact.

Public Service Co. of No. Illinois Employee Essay Contest

Public Service Co. of Northern Illinois is awarding valuable cash prizes for the best papers written by employees under the classifications Financial and Accounting, Technical and Operating, Sales and Promotional, Public Relations and Advertising and Industrial Relations.

The writer of the winning paper will receive an award of $100. Four additional awards of $25 and five of $10 are offered. The contest is being staged in order to stimulate study on the part of employees in the major problems confronting the industry.

Department heads in the various divisions of the company and outside authorities are named as judges of the contest.

Tacoma Army Post Gas Equipped by Washington G. & E.

Recently completed barracks, warehouses, hospitals and officers' quarters, constructed at a total cost of about $2,000,000, on the grounds of Fort Lewis, Tacoma, Wash., are all gas equipped. The Washington Gas & Electric Co. has 251 meters at the fort which registered a total in June of 2,552,600 cu. ft.

Additional Line to Visalia, Calif.

Southern California Gas Co., is laying 8½ miles of 4-inch pipe, taking off just outside Visalia from the Kettleman Hills-Visalia transmission line, to Tulare. The new pipe line will increase the natural gas transmission facilities supplying Tulare.

San Francisco-Oakland Bridge Calls for Extensive Relocation Work

CONSTRUCTION of the San Francisco-Oakland Bay Bridge is causing the Pacific Gas and Electric Co. to relocate its mains in the vicinities of the approaches at either end of the bridge. Relocation work is proceeding on at least 20 streets on each side of the bay, some of them several miles from the bridge itself. More of this work is scheduled for this winter and next spring.

Among relocation jobs completed so far is the rebuilding of the gas distribution mains and laying of a 20- and 16-inch pipe line on San Pablo Ave., in the Oakland-Richmond area. Several hundred service connections have already been changed over following the relocation of mains. Plans for the construction of a subway under an East Bay thoroughfare also necessitated considerable re-routing of mains.

Southern Calif. Gas Co. New Model Kitchen Set

A NEW model kitchen background set has been developed by Southern California Gas Co., Los Angeles, and is now in use in the company's current series of cooking schools. It showed for the first time in San Bernardino, where a three-day school conducted early in October by Gladys B. Price, home service supervisor for the company, played to a total of 3,000 women.

Dimensions of the new model kitchen set are 33 feet from end to end and 10 feet high. It is modernistically designed, with a central window shaded by venetian blinds, imitation steel cabinets, planning desk, lights to illuminate all appliances, and other up-to-the-minute features. While designed strictly as a stage setting, all surfaces are moulded in relief, and an extremely realistic effect is conveyed.

General Electric Consolidates Air Conditioning Department at Bloomfield

FOLLOWING the consolidation of all divisions of the Air Conditioning Department of the General Electric Co. at Bloomfield, N. J., E. J. Opal, formerly manager of the Department's merchandising division, has been appointed manager of the Gas Furnace and Air Circulator Division, according to J. J. Donovan, manager of the Air Conditioning Department. Mr. Opal will devote his full time to marketing the products of this division.

The merchandising division has been discontinued, and E. B. Shiddell, former assistant manager, was appointed assistant to the manager of the Air Conditioning Department, in charge of dealer operations. A. C. Roy, advertising and sales promotion manager, will serve as chairman of the sales committee.

P. G. and E. Dealer Tie-In Advertising

During 1934 and the first six months of 1935, a total of 751 dealer advertisements were published alongside newspaper advertisements of Pacific Gas and Electric Co., San Francisco. These tie-in ads represent 10,525 column inches of space or 65 full eight-column pages.

Detroit City Gas Co. to Share Profits with Customers

DETROIT City Gas Co. and the City of Detroit, on October 17, entered into an agreement which is almost unique among utility-municipal relationships. Under it the gas company will divide its profits above an established base earnings figure between its consumers and stockholders, distributing cash dividends to customers at the close of each fiscal year prorated according to amount of gas used by each.

In accepting the "Detroit Plan" the city council agreed to take immediate steps to remove from the ballot for the election of November 5 the proposal to establish a municipally owned and operated gas utility, and also to withdraw the demand for a payment of rental for use of city streets by the gas company. Frank P. Fisher, consulting engineer employed by the City of Detroit last March to work out a basis for settlement of the differences existing between Detroit City Gas Co. and the city, developed the present plan and was instrumental in securing its mutual acceptance.

An important development during the negotiations between city and gas company was the company's commitment to secure natural gas for Detroit. Mr. Fisher estimates Detroit's potential use of natural gas at as much as 230,000,000 feet daily.

While the definite rate schedule to apply upon introduction of natural gas has not been announced, present levels will be lowered materially, and a promotional structure used.

Specifically, the "Detroit Plan" calls for a base earning for the company of $3,850,000 per year, estimated as the minimum amount required to maintain its operations on a sound basis. This base earning, while not specifically related to the company's property valuation, and adopted only as a starting point to put the plan into effect, is actually 7 per cent on $55,000,000, and represents a substantial concession on the part of the company, whose property account, as reflected on its books, plus working capital, is approximately $68,700,000.

The plan provides that net revenue above the base earning shall be divided between the domestic consumers and the stockholders of the company. The first $550,000 earned in excess of the base earning, will be split between consumers and stockholders on a 50-50 basis, all additional profits to be divided on a basis of 75 per cent to the consumers and 25 per cent to the stockholders. In normal times the company has earned as high as $6,000,000 a year, or $2,150,000 more than the base earning now established, and it is confidently expected that its business will increase substantially when it switches to natural gas.

The gas company will not await the coming of natural gas to institute the plan, but makes it retroactive to last April 8, when increased rates were put into effect for manufactured gas. Under this arrangement consumers will be entitled to dividends on the current fiscal year's operation, provided the earnings exceed the base figure of $3,850,000.

Glendale, Ariz., to Have Natural Gas This Month

CENTRAL Arizona Light and Power Co., Phoenix, is constructing an 8-mile natural gas transmission line of 5- and 4-inch pipe to Glendale, Ariz., from Western Gas Co.'s transmission line serving the Central Arizona steam electric plant. The Glendale distribution system is under construction, and gas service for the community is expected to commence some time in November.

The company estimates that it will eventually serve about 400 consumers in Glendale. The plant of the Associated Dairy Products Co. will be supplied by the new distribution system. Local business will be handled by practically the same personnel now at the company's Glendale electric office. A new $15,000 building for Central Arizona Light and Power Co. Glendale offices is scheduled for early construction.

San Diego Employees' Association Celebrates 20th Anniversary

The Employees' Association of San Diego (Calif.) Consolidated Gas & Electric Co., last month celebrated its 20th birthday. It was organized to promote good fellowship and assist member employees in meeting the costs of sickness and injury. To date the association has paid a total of $106,864 in 1,265 benefits ranging in value from $1.25 to over $1,000, and boasts a surplus of nearly $10,000.

Minneapolis-Honeywell Conducts Automatic Heating Campaign

Minneapolis-Honeywell Regulator Co. in the latter part of September and early October ran a series of newspaper advertisements in principal cities in the interests of automatic heating and the Chronotherm, the company's automatic heat control unit. The advertisements carried the theme "Buy automatic heat now. See your distributor." A second series of newspaper advertisements was begun in October to run into November. A third series is to appear in national mediums.

As a part of its current promotional work Minneapolis-Honeywell has prepared a salesman's portfolio and consumer folders, and has held meetings in 50 of the larger cities that have been attended by more than 8,000 dealers and salesmen.

Carbee So. Calif. Purchasing Agent

G. W. Carbee, for several years in the engineering department of the Southern California Gas Co., Los Angeles, and later in the sales division, has been appointed purchasing agent for the company, succeeding R. Y. Handasyde, who has resigned.

Goldschmidt Appointed Superintendent

Henry G. Goldschmidt, Jr., has been appointed superintendent of the Peoples Light Co., Davenport, Iowa, gas plant, according to word received from W. J. Wuestenfeld, assistant general manager of the company.

Industry Mourns Loss of Frank Bivens

Western Gas is indebted to Clyde H. Potter for the following tribute to the memory of Mr. Bivens, whose death last month is mourned by all who knew him.—*Editor.*

THE western gas industry lost one of its most widely known leaders, and the Pacific Coast Gas Association a loyal supporter and past president in the passing on October 16, last, of Frank H. Bivens at his home in Long Beach, Calif. Mr. Bivens who, at the time of his death was a director of the Southern Counties Gas Co. of California, had retired from the vice-presidency of that company on May 25, 1934 following a career of more than 35 years in the gas business, the greater part of which was spent in Southern California.

Frank H. Bivens

Mr. Bivens was born in Philadelphia on August 22, 1873. The family moved shortly thereafter to Denver where he was educated in the public schools. He later was graduated from the University of Colorado at Boulder. Following graduation he spent approximately a year on the west coast of Africa and in the interior of Asia on a mining exploration trip.

Returning to Denver Mr. Bivens entered the employ of the old Denver Gas Co. in the distribution department where he remained until the outbreak of the Spanish-American War in 1898. He volunteered for service, was ordered to the Philippine Islands where he spent two years as a first lieutenant of infantry and was wounded in action.

Shortly after the turn of the century he obtained employment in the operating department of the Los Angeles Lighting Co., predecessor of the present Los Angeles Gas and Electric Corp., remaining with that corporation from May 19, 1902, to December 31, 1906.

Early in 1907 Mr. Bivens went to Mexico City, Mexico, where he directed the installation of the plant and distribution system of the first gas company there. He later went to Merida, Yucatan, and participated in the erection of the first gas plant and properties in that Mexican city.

Returning to Los Angeles late in 1910, he became affiliated with the Southern Counties Gas Co. of California, which on February 24, 1911, was organized with a group of scattered manufactured gas properties in Orange County, Whittier and in Covina. Mr. Bivens was placed in charge of these properties which were operated from a central point at Whittier. Following a period of reorganization, F. R. Bain, today chairman of the board, made available badly needed capital and was elected president of the company. Then ensued a period of rapid expansion which has continued up to the present day. As superintendent, Mr. Bivens rebuilt certain of the newly acquired plants and at one time or another during the next 23 years personally took over and operated each district property for the company.

He was for several years in charge of the Monrovia District which he reorganized after acquisition by the company. In June, 1916, he was transferred to the newly formed Pomona District. In March, 1919, he was placed in charge of the newly acquired gas properties in Santa Barbara and Ventura Counties.

From Santa Barbara Mr. Bivens was transferred on September 1, 1923 to Long Beach where he operated the company's largest district while litigation between the company and the City of Long Beach was in progress. Upon the sale a year later of this property to the city, he was advanced to the general office in Los Angeles and appointed general agent in charge of new business development.

On April 1, 1928, upon the election of F. S. Wade as president, he was elevated to the vice-presidency in charge of sales and public relations, a position he filled up to the time of his retirement on May 25, 1934 when his health forced him from active business.

Mr. Bivens, for 30 years, took an active part in the National Commercial Gas Association which later became the A.G.A. He attended several of its conventions and served on a number of A.G.A. Laboratory Requirements Committees.

An energetic supporter of the Pacific Coast Gas Association, he regularly participated in its last 26 conventions with the exception of the 1934 Del Monte meeting which only his failing health prevented him from attending. He served as chairman of several technical and commercial committees, was a past director of the Association and was honored with the election to the presidency for the year ended September, 1930. His administration marked a high point in the Association's history, in membership, many craft accomplishments and convention attendance.

Upon his retirement from business, the Board of Directors of the Association gave him a life membership in the Pacific Coast Gas Association, an honor which he prized highly.

Mr. Bivens leaves a host of friends in the industry, not only in Southern California and on the Pacific Coast but throughout the East as well. A man who rose from the ranks, he understood the viewpoint of the service man, the meter man and the office employee, whose duties he himself had performed at various stages in his career.

Those in the company who were privileged to work with Mr. Bivens for many years, feel his passing very keenly. Years of association impressed upon his co-workers the generosity of the man, his unselfish assistance to fellow employees, and his kindness to all those with whom he came in contact. He was a splendid executive, whose office door was always open to an employee of any rank—a fine type of citizen and a kindly man devoted to his family and community.

He is survived by a widow, Rosalia M. Bivens, who knew many of Mr. Bivens' associates and friends in the industry and with whom the industry deeply sympathizes in her loss. He also leaves two sons, Wesley E. of Los Angeles, and James J. of Long Beach; a sister, Mrs. Alice Brown of Denver, and two brothers, John W. and Albert Bivens of Denver, Colorado.

Booklet Commemorating A.G.A. Laboratories 10th Anniversary

In commemoration of the Tenth Anniversary of its Testing Laboratories' program, the American Gas Association published last month a 40-page booklet entitled "For the Benefit of the American Gas Industry and 63 Million Gas Consumers." The booklet treats of every phase of the Testing Laboratories' work, history, and possibilities, emphasizing in particular what the Laboratories have meant to both the industry and is consumers. It is printed in two colors and contains 69 illustrations.

The publication is the 1935 Report of the Laboratories Managing Committee. It was distributed to all delegates at the 17th Annual Convention of the American Gas Association as one feature of the Laboratories' Anniversary celebration included on the program. One or two copies of the booklet may be secured without charge. Larger quantities will be supplied at cost.

Australian Gas Light Co. Representatives Complete Tour

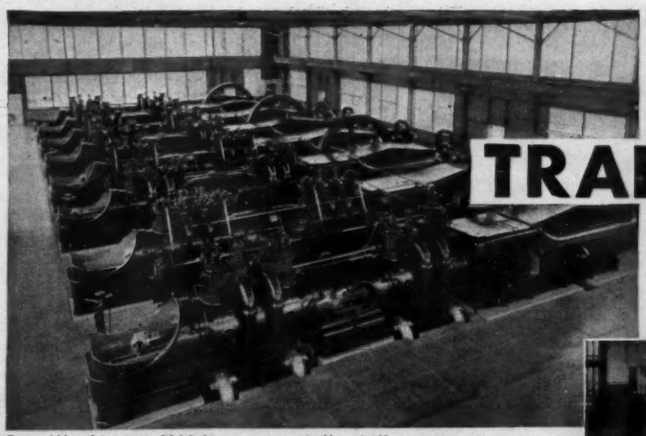
FOUR representatives of The Australian Gas Light Co., Sydney, New South Wales, who have been touring Europe, England, Canada and the United States, will embark on their return trip to Sydney November 6, from Vancouver, B. C., on the S.S. Niagara. H. Wood, engineer for works, C. C. Challis, controller of testing and research, and J. A. Barr, superintendent of service, began their tour in February of this year, while G. Jones, showroom supervisor, started on his trip in August and visited only the United States and Canada. Their itinerary in the United States and Canada included Montreal, New York, Pittsburgh, Chicago, Los Angeles, San Francisco, Portland and Vancouver.

Pacific Lighing Corp. Reports Increased Earnings

Pacific Lighting Corp. earned $4.05 a share on its outstanding common stock for the 12-month period ended September 30, 1935, as compared with $2.37 a share for the like period last year. This is an increase of $4,988,674 or 11 per cent in gross revenues over the preceding period, partially accounted for by an increase of 26,536 active domestic and commercial meters, the total number of active meters as of September 30 being 768,282. Industrial gas revenues showed a 16.7 per cent increase.

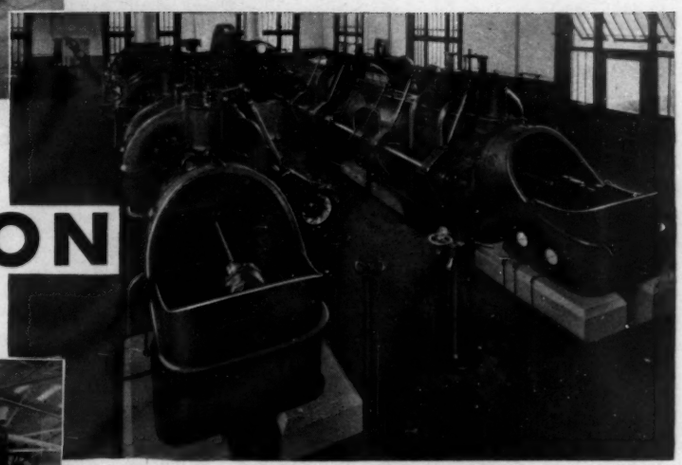
"Quality Prospect Campaign"

Employees of The Peoples Gas Light & Coke Co. are engaged in a "Quality Prospect Campaign," with "quality" space heating prospects being the objective. A total of 976 prospects were turned in the first 15 days of the campaign with 132 sales resulting therefrom.



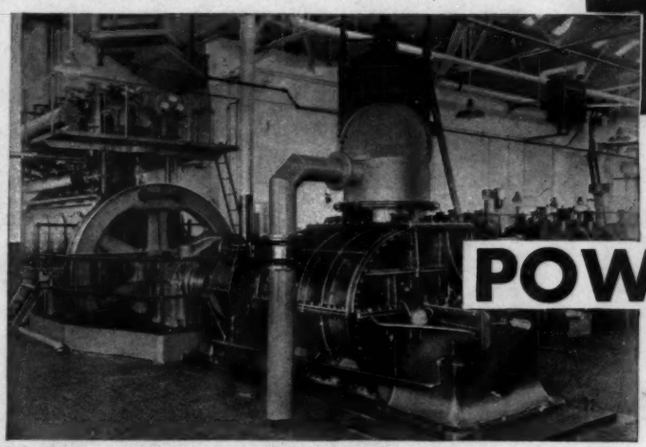
Four Worthington 1300-horsepower 24" x 36" Horizontal Twin-tandem Gas Engine Gas Compressors at Perryville, Louisiana, Field Station of Southern Natural Gas Company

TRANSPORTATION



One of two Worthington 900-horsepower 20" x 30" Horizontal Twin-tandem Gas Engine Gas Compressors, at Newtown Station of Brooklyn Union Gas Company, Brooklyn, New York

DISTRIBUTION



Worthington 500-horsepower 18" x 25" Vertical Gas Engine, operating Roots-Connersville Blower at plant of Boston Consolidated Gas Company...Worthington Twin-tandem Horizontal 18½" x 20" Gas Engine Gas Compressor in background

POWER GENERATION

THE MOST COMPREHENSIVE LINE OF GAS ENGINES ... horizontal and vertical, for pipe line pumping, service distribution, and power generation ...

30 to 1500 horsepower

FIELD-PROVEN

... more than half a million horsepower in successful operation

WORTHINGTON PUMP AND MACHINERY CORPORATION

General Offices: **HARRISON, NEW JERSEY** - *Branch Offices and Representatives in Principal Cities throughout the World*

WORTHINGTON

ATLANTA BOSTON BUFFALO CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT EL PASO HOUSTON KANSAS CITY LOS ANGELES NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH ST. LOUIS ST. PAUL SAN FRANCISCO SEATTLE TULSA WASHINGTON

A-35106

Rating a multiple-helmet gas hair dryer at the A.G.A. Testing Laboratories.

Requirements Forming to Cover Hair Dryers

IN connection with introduction during the past two years of numerous types of gas-operated hair dryers, it is interesting to note that the American Gas Association Testing Laboratories has already tested a number of dryers and extended approval to some half dozen such units. Thus far testing for this equipment has been in accordance with the American Standard Approval Requirements for Gas Space Heaters and for Unit Heaters, in the absence of specific requirements for hair dryers.

The Association's Approval Requirements Committee (American Standards Association Sectional Committee, Project 221) has authorized the formation of a subcommittee to formulate approval standards for hair dryers and instructed the Laboratories to conduct appropriate research for the guidance of that body in preparing adequate specifications.

Such a subcommittee has now been formed, made up of the following members:

C. C. Krausse, assistant manager, fuel sales, Consolidated Gas, Electric Light & Power Co. of Baltimore.

Walter M. Berry, consulting gas engineer, Los Angeles, Calif.

J. R. Denise, utilization department, Consolidated Gas Co. of New York.

J. R. Emmert, chief engineer, Emil J. Paider Co., Chicago, Ill.

C. G. Gross, chief engineer, Halliwell, Inc., New York, N. Y.

A. J. Hartfield, president, Pacific Gas Radiator Co., Huntington Park, Calif.

Hugo Johnson, assistant engineer gas distribution, Los Angeles Gas & Electric Corp., Los Angeles, Calif.

Harry E. Kerr, president, The Barber Gas Burner Co., Cleveland, Ohio.

A. B. Lauderbaugh, Manufacturers Light & Heat Co., Pittsburgh, Pa.

N. J. Reiff, appliance laboratory, United Gas Improvement Co., Philadelphia, Pa.

This body will meet in the near future to consider the results of the Laboratories' investigation and complete tentative requirements. Requirements covering distribution of warm air flow to the various outlets of multiple-helmet dryers will be found necessary. The distribution of warm air temperatures at the various arms and helmets, as well as the temperature control features of the unit, will also require governing. Appliance efficiency (tentatively proposed to exceed 75 per cent) will be judged from tests of flue loss with account made for heat losses from duct and appliance body surfaces. Actual drying air temperatures will, of course, be limited appropriately, as will appliance surface temperatures.

"Gas Unit" Used by Australian Gas Light Co.

IN March, 1935, *Western Gas* published a discussion by Donald Henry of Stone and Webster Engineering Corp. under the title "The 'Heat-Hour': Proposed Energy Unit", in which he urged the adoption of the "heat-hour" (equivalent to 3412 B.t.u.) so as to measure gas consumption in terms comparable on a cost basis with competitive fuels (A kilowatt-hour = 3412 B.t.u.). The article has prompted Joseph H. Banks, superintendent of technical sales for The Australian Gas Light Co., Sydney, to send *Western Gas* the following information on his company's use during the past three years of a "Gas Unit", also equivalent to 3412 B.t.u.:

So that relative costs of gas and competitive fuels might readily be demonstrated to the public, The Australian Gas Light Co. adopted a "heat unit" as the standard for the sale of gas. At the International Steam Table Conference in England in 1929 a determination was reached which in effect gave the Board of Trade Unit a value of approximately 3412 B.t.u. The New South Wales Parliament in 1932 adopted that figure, and a heat unit of 3412 B.t.u. is now the legal standard for the sale of both gas and electricity in New South Wales. On October 1, 1932, The Australian Gas Light Co. began billing its customers in terms of this unit.

The value of this unit is then comparable to the heating value of a kilowatt-hour which is also equivalent to 3412 B.t.u. The number of "gas units" in 1000 cu. ft. of gas is computed as follows by The Australian Gas Light Co. which serves 550 B.t.u. gas:

$$\frac{550 \text{ (B.t.u. content/ cu. ft.)} \times 1000}{3412} = 161.2$$

(161.195) "gas units"

The resulting approximate figure (161.2) is applied as a conversion factor to the meter readings in rendering customers' bills.

On this basis relative costs of fuels are demonstrated in terms readily comprehensible to the consumer. During the introductory period of this practice, The Australian Gas Light Co. distributed two leaflets, one to customers and the other to employees, explaining this method of selling gas and showing the difference in gas and electricity costs. The two pieces of literature both show by simple arithmetical computation that at the existing rates the cost of gas heating is less than half that of electric heating for all domestic purposes.

A third piece of informational literature is now being supplied to all high school teachers and pupils. It defines in text book manner the British thermal unit, then proceeds to develop the "gas unit."

Mr. Banks states that the three years experience in using the gas unit have proven that it is eminently satisfactory, and that little difficulty was encountered during the introductory period.

Seattle Reorganization Plan Moving to Successful Conclusion

FINAL hearing for confirmation of Seattle Gas Co.'s proposed reorganization plan under section 77B of the National Bankruptcy Act has been set for November 4. The company's plan of organization has been approved by the Department of Public Works of the State of Washington. Its petition was filed in August of last year in the U. S. District Court for the western district of Washington, northern division, and in February, 1935, the present plan of reorganization was approved by the same court.

To effect the reorganization plan, consent of two-thirds of the stockholders in each class of stock was necessary, and the company has secured consent of upwards of 72 per cent of each class.

Under the former set-up, control of the company rested with Central Public Service Co. by virtue of its holding 30,000 shares of no par common stock, which represented 60 per cent of all voting stock. Under the reorganization, holding company interests will control only about 1 per cent of the voting stock, as all new stock issues vote share and share alike.

Northern Natural Gas Co. Pays First Dividend

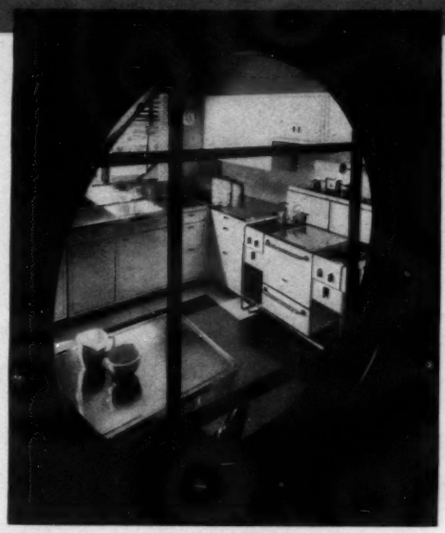
An initial dividend of $6 per share on the common stock of the Northern Natural Gas Co., interstate pipe line enterprise headquartering at Omaha, Neb., was paid on October 15, total payment reported to be about $1,218,000. Northern Natural's stock is 35 per cent owned by United Light & Power Co., 35 per cent by North American Light & Power Co. and 30 per cent by Lone Star Gas Corp.

Rockcastle Gas Co. New Line

Rockcastle Gas Co., Kentucky, is laying 1½-miles of 6-inch pipe from its gas wells on Buffalo Horn to Rockcastle Creek.

Mrs. Modern

SEES IN MAGIC CHEF THE GAS RANGE OF TODAY



MRS. MODERN wants to bring her kitchen up to date. She wants a kitchen that will enable her to do her work easily and on a schedule that will give her some leisure and allow her time to take care of her many other interests.

Mrs. Modern, however, realizes that no kitchen can be modern without a modern range. Her first step, therefore, is to replace her outmoded range. Consequently Mrs. Modern not only looks at ranges, but she is ready and eager to buy.

Today, due to kitchen modernization, Mrs. Modern is buying to get new style, new features and new standards of performance. She finds these in Magic Chef Series 1400, typical of style in advanced gas range design.

Many other Magic Chef models have just as many advanced features of convenience and efficiency and will give just as high a standard of performance. But to Mrs. Modern, Magic Chef Series 1400 represents the keynote of the modern kitchen of her dreams.

How American Stove Company is helping gas companies and dealers to get their share of the vast replacement business is an interesting story. Full details are given in the Magic Chef Portfolio for Fall. If you haven't seen it, write for a copy.

LOOK FOR THE RED WHEEL WHEN YOU BUY A MAGIC CHEF

Magic Chef
AMERICAN STOVE COMPANY

AMERICAN STOVE COMPANY

BOSTON • NEW YORK • ATLANTA • CLEVELAND • CHICAGO • PHILADELPHIA • ST. LOUIS • SAN FRANCISCO • LOS ANGELES

House Heating Fundamentals—Part I of a Series

(Continued from Page 13)

(c) The arrangement of baffles if used.

(F) *Conversion Burner Refractories or Baffles:*

1. When gas burning equipment is installed in coal heating plants, it is necessary to make the utmost possible use of all heating surfaces in order to get maximum efficiency.

Since the upper flue passages of coal heating plants are usually large and short, they cannot be depended upon to be useful in absorbing a large portion of the heat generated unless "baffled" to give increased travel of the flue gases. This is usually difficult to accomplish in any standardized or general way because of the variety of sizes and shapes of flue passages of the various makes of boilers and furnaces. Manufacturers of conversion burners, therefore, design their equipment so that the greatest possible part of the heat generated can be absorbed in the firepot proper and thus depend upon the upper flue passages to absorb only a small portion of the heat generated.

This is done in three ways:

(a) The flames or hot products of combustion are deflected into scrubbing contact with the side walls of the firebox by means of baffles of refractory material or metal, and thus give up a large portion of their heat before entering the upper flue passages.

(b) The heat liberated by combustion is used to heat some form of refractory material to incandescence and thus create a high rate of heat transfer from this material to the heating surfaces by radiation.

(c) A combination of the two above is sometimes used.

2. Since baffles and refractories are used to accomplish a definite purpose in conversion burner application, it is very important that they be properly installed. A wrong installation of baffles or refractories may defeat the very purpose for which they are provided.

(G) *Conversion Burner Selection:*

1. The selection of the proper size conversion burner for a coal heating plant is usually based on two important factors:

(a) The burner should fit the space in the firebox in such a way that the heat generated can be efficiently delivered to the heat absorbing surfaces.

(b) The burner capacity for the size heating plant that it will fit should be equal to or greater than the capacity of the heating plant as a coal burning appliance.

(H) *Conversion Burner Position:*

1. The important object in placing a conversion burner in a coal heating plant is to get a high percentage of heat absorption and at such places in the firebox where it will do the most good toward promoting air circulation in warm air furnaces, water circulation in hot water heating plants, and steam generation in steam boilers. With this thought in mind it can be seen that correctly placing a conversion boiler in a coal heating plant is *not* a matter of merely fitting it into the firebox. Some important points are:

(a) The burner heads or the lowest point of heat emission should be *above* the grate level in accordance with manufacturer's instructions.

(b) Burner heads should be at or above the bottom of steam or hot water return connections.

(c) Burner heads, or the lowest point of heat emission, should be above the top of cold air return pipes on warm air installations.

(d) In round firepots, the burner should be centered.

(e) In rectangular firepots, the burner should be located at the farthest point from the flue opening to the upper flue passage. This means that in most rectangular boilers the burner should be placed near the front of the firebox.

(f) It is not necessary to have the burner heads close to the heating surfaces when means are provided to direct the products of combustion or to get a large percentage of heat transfer through radiation.

(I) *The Input Rating (Gas Rate per hour):*

1. Heating demands of buildings differ very widely, as does also the capacity of heating plants and gas burning equipment. The heat input to any particular installation should satisfy the heating demand, giving proper consideration to four important factors:

(a) Heating demand of building in coldest weather.

(b) Capacity and characteristics of burner equipment.

(c) Capacity and characteristics of heating plant.

(d) Capacity and characteristics of heating systems (radiation, piping, duct work, etc.).

2. It is the usual practice to rate burners according to the heating demand of the building in coldest weather and this, in general, is satisfactory.

The basis is as follows:

(a) Hot water and steam heating installations are given an input rating double the heat loss on a zero day.

(b) Warm air installations are given an input rating about 60 per cent greater than the heat loss on a zero day.

3. Proper consideration of factors (b), (c) and (d) under "input rating" should include the following points:

(a) The conversion burner input rating should, in general, be between 40,000 and 75,000 B.t.u. per hour per square foot of grate area.

Small coal boilers (4 square feet of grate surface or under) should have ratings close to the lower limit of this range. Boilers having grate areas from 5 to 14 square feet can easily handle ratings up to the upper limit of this range.

(b) The input rating should never exceed the maximum capacity of the gas burning equipment.

(c) On steam systems, the input rating usually can be figured on the basis of installed radiation rather than heat loss of building, provided, of course, that other factors do not seriously interfere.

Consideration of Public Practiced By Lone Star Companies

Companies of the Lone Star System, Dallas, Texas, take unusual pains to minimize the nuisance to the public of improvement work. As an example, the Fort Worth Division recently was replacing mains in the vicinity of a hospital. The hospital was called and inquiry made as to the time of day the noise from pneumatic tools would be least objectionable.

When working near a house where there is a day sleeper, the compressors are operated at chosen hours. In laying a line through a parkway, the sod is carefully removed in blocks which are kept wet and protected from the sun.

Architect and Builder Contact Activity for Southern Calif. Companies

Southern California Gas Co., Los Angeles Gas and Electric Corp. and Southern Counties Gas Co., headquartering in Los Angeles, are engaged in formulating a procedure for contacting architects and builders in that area in the interests of gas installations with the purpose of making these two branches of the building industry increasingly gas conscious. J. L. Hall, formerly illumination engineer with Los Angeles Gas and Electric, and L. T. Young of Southern California Gas, while remaining in the employ of their respective companies, will handle the contact work for the three companies.

First Gas Engine Installation for Railways Ice Co.

Railways Ice Co. has installed a 170-h.p. Waukesha natural gas engine in its plant at Clovis, N. M., which is on the lines of the Gas Co. of New Mexico, where it replaces an auxiliary 75-h.p. steam power unit. The gas engine will be used as an auxiliary to a 400-h.p. Diesel engine in the ice making plant. This gas engine is the first to be used by the Railways Ice Co., and is to be watched as a test case with the view of possible further installations in the company's plants throughout the country.

McCullar Named North Texas Sales Engineer for Daniel

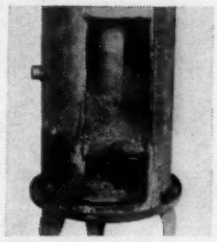
Appointment of R. B. McCullar as sales engineer and factory representative for Northern Texas for the Daniel Orifice Fitting Co., Los Angeles, is announced by Paul P. Daniel, president. He assumes his new post immediately. Mr. McCullar is a native of Fort Worth, and is widely known in the Texas petroleum industry. By training he is a petroleum engineer and geologist and has had a wide experience in designing oil and natural gas equipment.

. . . and *constant gas consumption* when the tank is made of *non-rust* Everdur

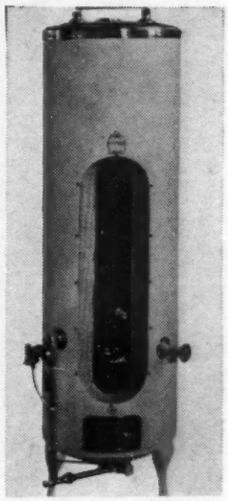
Why should you sell or encourage the sale of water heaters equipped with tanks in which rust will form... to discolor the water, reduce efficiency, and in time cause the tank itself to fail? In many sections of the country this happens all too often, resulting in consumer dissatisfaction, increased servicing expense, and an interrupted sale of gas.

A tank of Everdur Metal assures a dependable source of rust-free hot water...not for just a few years, but *indefinitely.* For Everdur, an unusual alloy composed principally of copper, is as strong and easily welded as steel, and lends itself to economical, virtually "one-piece" tank construction. It *cannot* rust!

These features appeal to homeowners. For most people will pay a little more to get much greater value. These same features explain why leading heater manufacturers equip rust-proof models with tanks of strong, *rustless* Everdur.



After less than one year's use, six inches of mineral deposits had settled in this tank, making its operation expensive and hazardous. To cope with such situations, CROWN Model "A" heater is built with a hand hole clean-out.



Cut-away view of CROWN Model "A" automatic gas water heater, made by Crown Water Heater Co., Los Angeles. Special features include a hand hole clean-out and an all-welded tank of *non-rust* Everdur Metal.

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Government in Business and the New Deal

(Continued from Page 25)

Federal Trade Commission agents, the utilities offered to submit full evidence in explanation and justification of everything that had been "revealed" concerning them in the testimony, nothing of which, however, had been secret or under cover; but they were met with the declaration by the presiding commissioner that the Commission was charged by the Senate with responsibility to ascertain what had been done by the utility companies, not why these things had been done or with reporting what had been done by others. Up to the present, the utilities have been denied their day in court. The Federal Trade Commission has released "piecemeal" to the Senate and to representatives of the press of the nation, installments of its report under the Walsh Resolution, in such manner as to establish in the public mind the distinct impression that reprehensible practices have been universal in conducting public utilities, whereas a fair estimate, even of the direct testimony in the exparte investigation, would show any questionable acts or practices to have been the rare exception and not the rule.

The National Electric Light Association prepared a brief and exhibits for introduction into the case, but was refused any consideration. On this one-sided presentation, that of the accuser and with no opportunity for defense, the American people are asked to pass judgment upon a business whose only offense, as a business, is that it has outstripped every other, of its time or any other time, in its contribution to the progress and welfare of mankind.

The attention of the Federal Trade Commission in its utility investigation has been directed almost entirely to electric companies, but it was announced late last year that the commission would make the natural gas industry the principal subject for investigation under the extension voted in 1934 by Congress of its time for the utility investigation. A Federal Trade Commission economist had testified that eight major groups controlled practically the entire natural gas industry, producing more than 84 per cent and purchasing more than 85 per cent of the nation's natural gas output.

There have been visits by investigators for the Federal Trade Commission to the offices of many natural gas companies, but this phase of the utility investigation has not, up to this time, become intensively active.

Holding Companies

Franklin D. Roosevelt, about two weeks before his election as President in 1932, said in an address at Portland, Oregon:

"I do not hold with those who advocate government ownership or government operation of utilities. I state to you categorically that as a broad general rule the development of utilities should remain with certain exceptions a function for private initiative and private capital."

In this speech the candidate advocated as point No. 4 in an 8-point plan, "regulation and control of holding companies by federal power commission and the same publicity with regard to such holding companies as provided for the operating companies."

The record of the New Deal down to date is not in harmony with these declarations in favor of conduct of the utility industry by private capital and of regulation, not abolition, of holding companies. The New Deal program has done more than to encourage public competition with private capital in the utility industry. It has planned and promoted replacement of private with public utility service. By grants and loans, and even by grants without loans, it has literally thrown into the laps of municipalities willing to accept it, money with which to establish publicly owned utilities with which privately owned utilities cannot compete. It has required that legislators ignore the declared interests and registered pleas of their constituents and enact a law which would abolish, not regulate, many holding companies and establish ultimate federal control by supplanting and superseding state control over many operating companies, the only exceptions to the "death sentence" for holding companies being those able to secure commutation of sentence from a federal commission accountable to an administration whose hostility toward holding companies in the utility industry has been revealed so often as to be beyond question.

This appraisal of the effect of this drastic legislation does not, of course, concede that the so-called "death sentence" will be carried into effect, since the Supreme Court of the United States already has demonstrated its readiness to preserve constitutional rights in the face of political influence against which senators and represetatives dare not stand.

To some it may seem that to credit the Socialist Party, and men who are or have been leaders in its councils, with having started the general movement which now appears to be so widely supported by men and groups who would resent being called Socialists, is unwarranted. However, it has been shown in this article that much of what has been done in establishing public competition with private business is what leading Socialists have been advocating for years.

The pride and joy of the New Deal Administration, if any one project or group of projects may be so designated, is the Tennessee Valley Authority. Norman Thomas, twice Socialist Party candidate for the Presidency, has declared this project to be truly socialistic in character. In 1928 Candidate Thomas, when asked as to his attitude toward the Eighteenth Amendment, said: "We (Socialists) would not just wipe out the Eighteenth Amendment. We would wipe out the entire constitution of the United States and make a new one from start to finish." Probably no one would charge, or suggest, that the President of the United States would go this far; but when he urges members of Congress to vote for a measure which would so fundamentally change the conduct and control of business in the United States as to raise in their minds grave doubt as to the constitutionality of such measures, it must at least be agreed that he is giving

THIS photograph of Mono-Cast Doublex Simplex Centrifugal Pipe being installed for high-pressure gas transmission shows how you can lay this pipe by jointing on skids above the trench, then lowering in. Use of this pipe saves money all down the line. For details address American Cast Iron Pipe Co., Birmingham, Ala.

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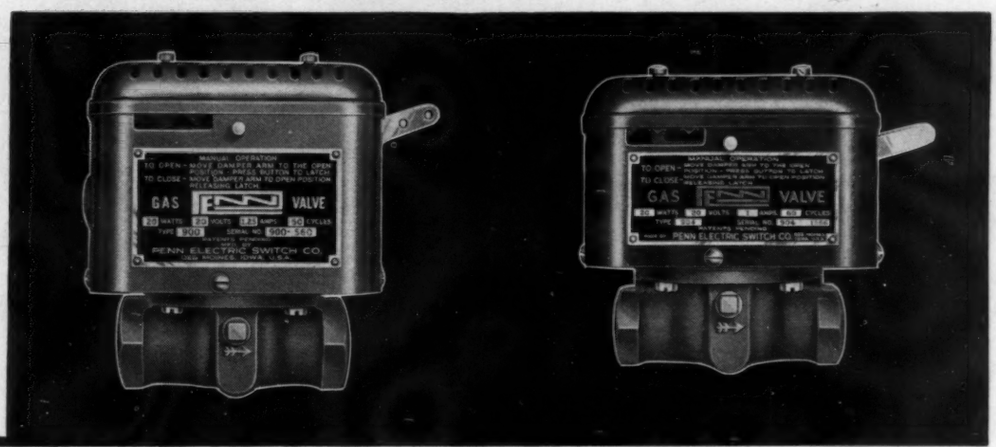

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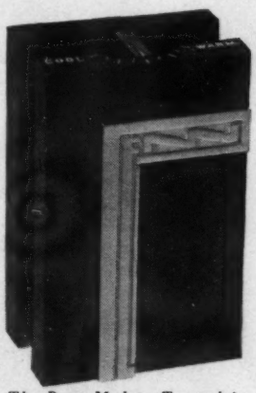

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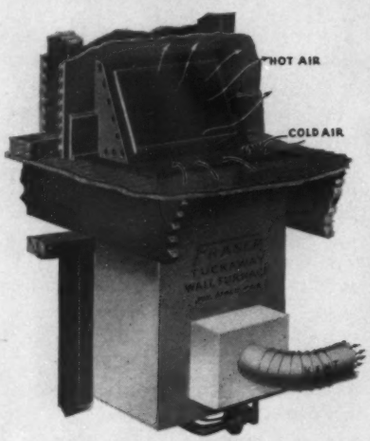

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aid and comfort to all enemies of the constitution as it stands.

Early in 1927 a meeting was held in Washington in the office of Senator Norris of Nebraska, by a group of public ownership advocates, including numerous senators and congressmen, at which a definite decision to wage war against the so-called electric power trust was reached. This meeting was held on March 10 of that year. Those present included, in addition to Senator Norris, Governor Pinchot of Pennsylvania, Basil Manly, and Representative Swing of California, and Senators Johnson, Borah, Nye, Frazier, Howell, Norbeck and Harrison of Georgia. The meeting considered specifically the Muscle Shoals and Boulder Canyon power projects. The American Appeal, a Socialist newspaper, founded by Eugene V. Debs, in its issue of March 19, 1927, reporting the meeting of March 10 in the office of Senator Norris, said with reference to Muscle Shoals and Boulder Dam: "Public ownership and operation of these two great projects will split the power trust wide open and pave the way for the practical realization of socialism as nothing else will."

Reference was made earlier to the preparation in the present year of some 500 bills by the Public Works Administration to be introduced in the legislatures of the several states. One of these measures is known as the revenue bond law. Manufacturers of equipment used by utilities are active in promoting the adoption of this measure. Whether justified or not the Public Ownership League of America in its annual report for 1929 assumes credit for having launched the plan to secure universal adoption of this law. This measure is represented as enabling municipalities to build or acquire municipal projects, without bond issues or taxable indebtedness. Its real purpose is to enable municipalities to circumvent laws wisely established in earlier years to limit the power of municipal officials to plunge their cities into indebtedness without a vote of citizens. Where this law is adopted a body blow is dealt to private ownership and operation of utilities.

Had the utilities not been denied an opportunity to present their case before the Federal Trade Commission, the origin of the movement in behalf of public ownership of private business in this country, of which the Federal Trade Commission investigation was and is a part, would have been brought to public attention. Denial of this right, for the purpose of preventing the public from learning these facts, was and is a part of the public ownership program. Perhaps in connection with the campaign of 1936 the sad but true story may be told to the whole public.

Economic Battle Is On

Government in business to the extent that its proponents' wish and plan would establish, and to the extent that it has been accomplished, has established a new economic idea in this country. When Columbus discovered America there was no established order on this continent. There can be no question as to the credit due the American economic system for the development of the United States to world preeminence. Government in business, in whatever degree, is a departure from this system and a step in the direction opposite from that which has borne us to our present leadership among nations.

A tidal wave of radicalism has struck our prosperity and threatens to wipe from its foundation the business structure of which all Americans must be proud, and in the building of which the utility industry has contributed its full share. A war between economic systems is on. Every citizen, willy-nilly, must vote either for or against the further and full encroachment of his government upon private business.

The part that every citizen who understands the significance of what is happening should play is to be a Paul Revere who shall call his own people to battle in defense of their country.

Col. Rockwell Heading Company Delegation to A.P.I.

COLONEL W. F. ROCKWELL, president of Merco Nordstrom Valve Co. and Pittsburgh Equitable Meter Co., has just completed a coast to coast trip visiting the plants operating under his direction, and is now enroute to Los Angeles to attend the A.P.I. Convention, accompanied by Mrs. Rockwell. He is voyaging via Panama on the

W. F. Rockwell

L. A. Dixon

St. Helene. After the convention he will spend some time on the Coast in the interest of these two companies.

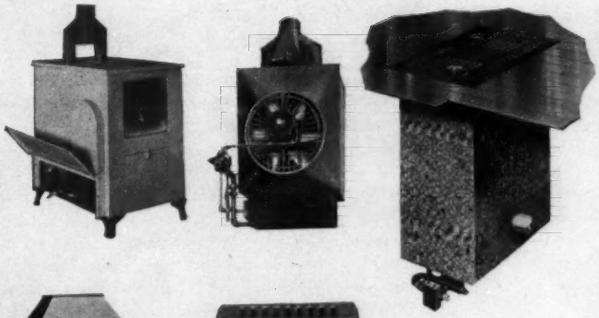
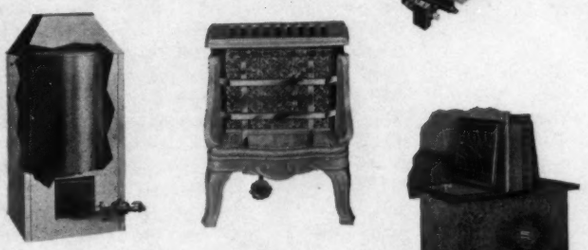
As a result of his confidence in the present outlook for improved business conditions he has authorized expenditures of over $1,000,000 in the various plants.

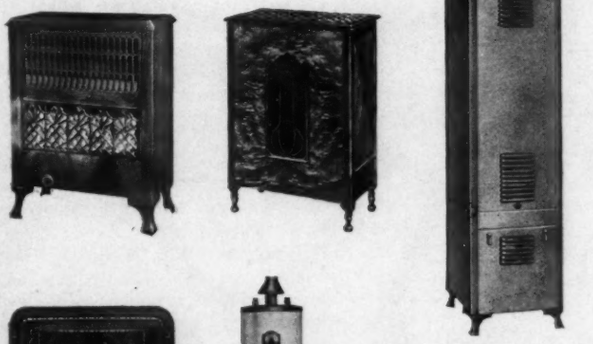
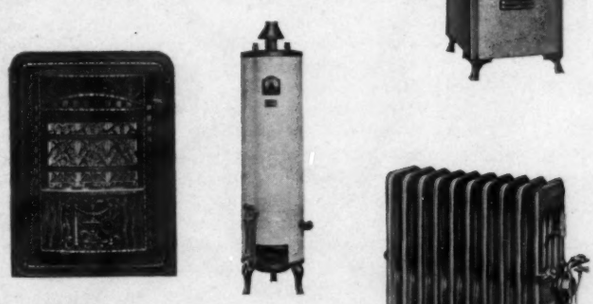
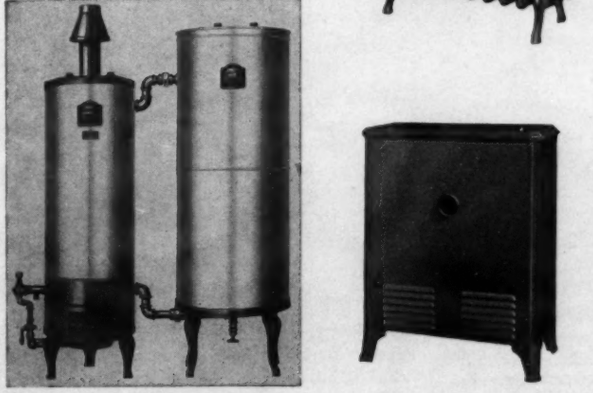
L. A. Dixon, vice president and general sales manager of the companies, with headquarters in Pittsburgh, and Art Kerr, manager of the Mid-Continent divisions, also plan to attend the A.P.I. sessions. They will spend considerable time at the Oakland plant before returning East.

The companies will establish headquarters during A.P.I. dates at the Biltmore Hotel, where convention sessions are being held.

Revised Arc Welding Handbook Announced by Lincoln

A REVISED and enlarged 586-page edition of "Procedure Handbook of Arc Welding Design and Practice" is announced by the Lincoln Electric Co., Cleveland, Ohio. It is divided into eight principal sections which deal with different phases of arc welding, and contains over 700 illustrations consisting of detailed drawings and photographs covering various uses and applications of arc welding.

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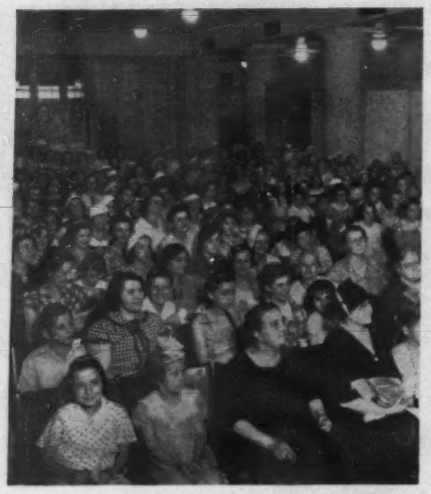


Audience at childrens' cooking school.

Cooking Classes for Children Draw Large Attendance

COOKING classes for children, wherein they are taught the rudiments of successful cooky-baking and candy-making are meeting popular response in the Chicago area in a series of seven classes being conducted by the Home Service Department of the Peoples Gas Light & Coke Co., with Mrs. Anna J. Peterson as director. Three hundred and sixty-five attended the first meeting, 226 of these being children.

Among the recipes taught are those for molasses taffy, molasses corn balls, orange straws, lollipops, popcorn, macaroons, chocolate fudge, peanut butter fudge, chocolate caramels, taffy apples, cocoanut cones, butter cookies, sliced chocolate walnut cookies, Josephine D's cookies and rich vanilla cookies. The children are also taught to prepare simple breakfast, luncheon and dinner dishes. Attendance at the school has been built up by radio announcements.

Public Utility Accountant Seeks Connection

An accountant, 36 years of age, with knowledge and experience in practically all public utility accounting departments, including supervisory and semi-executive assignments, desires to again become connected with a public utility. He has also served as chief clerk in general office and consumers accounting departments and has been in charge of construction and plant records. The applicant states that all else will be considered secondary to an assignment with an opportunity. *Western Gas* will be glad to forward inquiries to the applicant.

Promotional Rates for Austin, Texas

Texas Public Service Co., headquartering in Austin, Texas, has volunteered the following promotional rate schedule which has been accepted by the city of Austin: First 1,000 cu.ft., $1.14; next 4,000 cu.ft., 62½c per 1,000; next 20,000 cu.ft., 60c per 1,000; next 25,000 cu.ft., 57½c per 1,000; and all over 50,000 cu.ft. at 55c per 1,000.

Reliance Regulator Corp. Issues New Equipment Bulletins

RELIANCE Regulator Corp., Alhambra, Calif., has issued Bulletins Nos. 35, 36 and 37, describing the Reliance type A filters, type P regulators, and type Z and ZB pilot regulators and the Reliance relief valves, respectively.

The recently developed type A filters are designed for use on individual appliances such as water heaters, ranges, furnaces, etc., and on house service lines in dust areas. Filter elements can be replaced without disconnecting from the line, a standard 2-inch pipe threaded outlet being provided for this purpose. These filters are made with ¾-inch standard connections with female threads at both ends or gasketed unions at either or both ends. Filter casings are made to withstand 150 pounds working pressure. Installation can be made in the horizontal or vertical positions with the dust chamber hanging downward to collect heavy particles. The bulletin contains a table showing capacity of the filters based on tests indicating the felt capable of handling 4 cu. ft. of .6 specific gravity gas per hour per square inch.

Bulletin No. 36 contains instructions for servicing, replacing valve seat discs and diaphragms, adjusting of cam for proper valve stroke and for stuffing box repairs. Bulletin No. 37 carries cut-away diagrams of the type Z and ZB pilot regulators and the Reliance relief valves and describes their operation, listing dimensions and capacities.

Natural Gas Equipment Has New Conversion Burner Bulletin

NATURAL GAS Equipment, Inc., has issued a new 12-page bulletin titled "Commercial Heating and Utilization of Conversion Burner Equipment."

The text is devoted to information relating to various types of heating equipment encountered in the commercial field, and covers standards of installations, estimating instructions, selection of equipment for various types of boilers, selection of controls, installation instructions, etc. The bulletin also describes the complete Natural Gas Equipment line of conversion burner equipment for commercial heating installations. Copies are available from Natural Gas Equipment, Inc., at either Petroleum Securities Bldg., Los Angeles, or 1123 Harrison St., San Francisco.

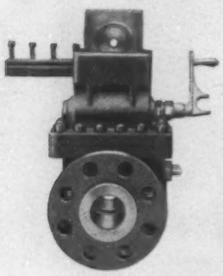
1936 Olympic Games Torch to Be Gas Flame

As at the Olympic Games held at Los Angeles in 1932, the traditional torch that will blaze over the Olympic Games at Berlin in 1936, will be a gas flame. The flame will be 7 yards high and 2 yards in diameter, and will be lighted by fire which 3,000 runners will relay from Greece, birthplace of the Olympic Games.

Holdiman Supervisor Heating Sales

R. W. Holdiman has been named as supervisor of house heating sales for the Western United Gas & Electric Co., Aurora, Ill.

IT PAYS TO STANDARDIZE ON DANIEL!



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- Daniel Wafer Plates Insert Discs for All Types of Fittings
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Standardization simplifies operations, saves time and reduces costs. You gain all these advantages—and more—when you standardize on DANIEL Orifice Fittings. There is a DANIEL Orifice Ftting of the type and size required for every gas measurement purpose. You can depend upon every DANIEL product for foolproof, trouble-free operation. Further, the DANIEL Wafer Plate provides for complete standardization and complete interchangeability in *all* your orifice plates, regardless of the type of fitting you are using. And DANIEL engineering service is *always* available to aid you on your own particular problems.

DANIEL ORIFICE FITTING CO.

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Sales and Service Representatives—LOS ANGELES: Paramount Mfg. Co., 1100 S. San Pedro St. SAN FRANCISCO: Paramount Mfg. Co., 484 Mills Bldg. HOUSTON: M. M. Dannenbaum, 1001 Shell Bldg. TULSA: R. B. McCullar and G. W. Daniel, 1 N. Boulder St. NEW ORLEANS: J. H. Carter, Jr., 212 Carondelet Bldg. NEW YORK: The Oil Field Equipment Co., 30 Church St.

MEASUREMENT and CONTROL

THE TYPE E ROBINSON ORIFICE FITTING

By HERBERT S. INGHAM

Chief Engineer, Robinson Orifice Fitting Company*

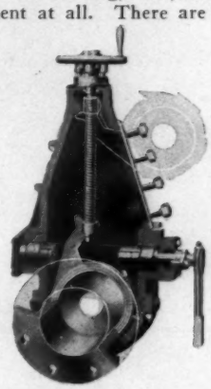
BACK of the new model orifice fitting dealt with in the following description is a story which holds true for many another piece of industrial equipment. Something over 10 years ago the first orifice fitting was introduced. Business conditions were quite different than those of today. The demand for many types of gas and oil field equipment was so far ahead of the supply that the manufacturer of new equipment was more likely to be concerned with production problems than with the conveniences of his product. The first orifice fitting did a better job than it had done before; therefore there was a demand for it. The original design was extremely simple, having just enough working parts to perform the necessary function.

Herbert S. Ingham

As time went on and experience was gained, improvements began to be added. As the design evolved, it became surer and safer, more convenient and more complicated. This type of design evolution is, of course, not unique to this industry. The automobile is a particularly good example of "growing like Topsy," and also of becoming "gadgety."

A time is finally reached, therefore, when it is necessary to start over again with a complete re-design, which will re-simplify the design and yet incorporate the advantages gained from experience. This period of re-design is the heyday for the designer for it is easier to improve something than it is to conceive of it in the first place, particularly as in the re-design period there is sufficient time for development and an ample background of experience. With these ideal conditions we would expect something quite improved in the way of a product.

The first step taken in the re-design of this new orifice fitting was to list the requirements of the ideal fitting. This list, made up without regard to how these requirements were to be obtained, was found to indicate quite definitely how the new fitting was to be designed. By far the hardest thing in design is to become sufficiently detached in attitude so as not to repeat methods for no other reason than that they have been done that way before. Here is an example which illustrates this point and also illustrates the great advantage of re-design over simple evolution. One of the original requirements laid down for this new orifice fitting was that the main shut-off valve between the upper and lower chamber be arranged so that it would close with the orfice plate in either the upper or lower position. This requirement led to complication of design, which is of itself a disadvantage. After wasting time and trouble, it was finally realized that this particular requirement had been outgrown by the new fitting, and, in fact, was no requirement at all. There are two possible reasons why it would be desirable to close the main valve while the orifice plate and its carrier are down in the line. First, if the ports were exposed when it is open, then there would be reason for closing it. Second, if there were space around the orifice plate carrier, allowing eddy currents to flow from the line into the upper chamber, then again there would be reason to close the valve. But neither of these conditions existed in the new fitting, as the valve has covered parts when open or closed, and the plate carrier is sealed on both sides when in the line. The elimination of this false requirement made it possible to obtain the other real requirements in a practical manner.



Type E Robinson Orifice Fitting, with plate carrier raised.

The result of this re-design is an orifice fitting that is quite easy to operate. To change orifice plates the operator turns the handwheel at the top of the fitting, thus raising the plate carrier into the upper chamber. The valve is then closed, by the lever at the right, so as to seal off between the line and the upper chamber. The valve seats are then sealed by means of grease from a grease gun built into the fitting. The cover plate on the side may be removed by loosening four nuts. Another turn of the handwheel then lifts the orifice plate carrier right out into the open for change or inspection of plates. No manual lifting of the carrier is necessary. A small lever or latch on the carrier is turned and then the sealing ring and orifice plate may be lifetd out. These orifice plates adhere to the present standard sizes for inserts. The above mentioned sealing ring contains a stainless steel spring ring or diaphragm which exerts pressure sealing both upstream and downstream ports when the plate carrier is forced by the screw down into the line. The distance across these seats is narrower than the rest of the chamber and the edges of the seats and also of the carrier and sealing ring are beveled so that the spring diaphragm is easily compressed as the carrier is forced into position. The sealing ring is constructed so that the plate is sealed in the line entirely by metal-to-metal contact under spring pressure, none of the plate sealing being done by sliding clearances. A flush bore is obtained in the line right to the edge of the plate both upstream and downstream. The plate carrier is located by three heavy pins which project from the sediment chamber and contact machined surfaces on the carrier. Dirt falling into the sediment chamber will therefore not affect the position of the plate. The carrier is of bronze, while the latch on the carrier is stainless steel.

The main operating mechanism is very simple, consisting of a stainless steel stationary elevator screw and a bronze follower nut which is pivoted loosely to the orifice plate carrier. This mechanism is enclosed in the upper chamber and can be easily oiled. The whole mechanism may be removed, if it is ever necessary, by closing the valve and removing the whole upper chamber. This can be done without shutting down the line.

The valve is of the cylindrical plug type and is full-floating. The valve stem connects with the plug through a slot and tongue so that when the plug is closed, it is entirely free to float vertically and thus seat itself by means of the pressure in the line. The plug also floats lengthwise, the full load of the pressure on the valve stem which goes out to the atmosphere being carried on a shoulder of the stem itself. This shoulder seals the pressure with the metal-to-metal contact of two machined surfaces so that the packing gland has very little work to do. This also allows the gland to be repacked under pressure. (The only other packing gland on the fitting, which is on the elevator screw, may be similarly repacked under pressure.) The plug valve is provided with a new quick-acting greasing system which is similar to the old proven method except that the distance of the grease travel has been greatly reduced. The built-in grease gun is in the center at the back of the fitting. After grease has been forced from the gun past a double check valve it enters an elongated reservoir or large channel in the hous-

*Presented before the Southern California Meter Association, September 26, 1935.

A FULTON *is at Home*

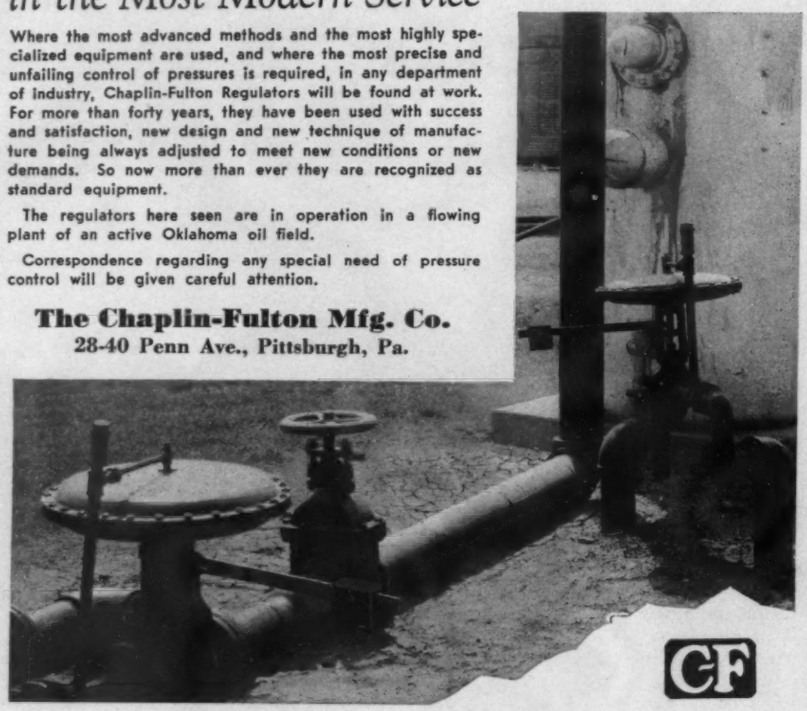
in the Most Modern Service

Where the most advanced methods and the most highly specialized equipment are used, and where the most precise and unfailing control of pressures is required, in any department of industry, Chaplin-Fulton Regulators will be found at work. For more than forty years, they have been used with success and satisfaction, new design and new technique of manufacture being always adjusted to meet new conditions or new demands. So now more than ever they are recognized as standard equipment.

The regulators here seen are in operation in a flowing plant of an active Oklahoma oil field.

Correspondence regarding any special need of pressure control will be given careful attention.

The Chaplin-Fulton Mfg. Co.
28-40 Penn Ave., Pittsburgh, Pa.



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GOODMAN USED SINCE 1897 2" HANDLE & LOCKING SLEEVE GAS MAIN STOPPER

The Goodman Stopper

The Reliable Shut-off for Street Mains

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, N. Y.

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ing which parallels the plug valve. From this channel are drilled a number of short holes which feed grease to a groove in the plug under one of the valve seats. A number of short holes right through the plug connect this groove with another similar groove under the opposite valve seat. Circular grooves around the plug at each end complete the seal. By this means grease is fed quickly and under even pressure to the whole seating surface. Of course, when the fitting is in operation, the grooves are already full so that a slight turn of the gun seals the whole valve.

The design of this new fitting also allows for the fact that many installations are restricted for space. In the event of an obstruction, the plug valve may be assembled with the operating handle on the opposite side of the fitting, no special parts being required for this change. If the pipe line is buried, the fitting may also be buried up to the plug valve, as the valve handle which operates through an arc of 90 degrees may be assembled in any one of four positions. Holes for pressure taps are provided on both sides of the fitting. Much head room is saved by bringing the plate carrier out the side of the fitting instead of the top, and yet, with the carrier out, the width is no greater than the previous model fitting.

The most important advantage of an ordrely re-design as applied to a product of this type is illustrated by the fact that it was possible to produce a simplified, convenient, modern product and yet adhere entirely to the fundamental operating principles which had been proven by years of actual service.

Metering Oil With Gas in Solution, S.C.M.A. Topic

MEETING in Los Angeles for the first time in several months, at the Rosslyn Hotel, Southern California Meter Association drew an unusually good attendance for its dinner meeting of October 24.

Opening the business program President F. E. Bradley announced that over 100 members and friends had attended the S.C.M.A. inspection trip at Columbia Steel Co.'s Torrance plant on the evening of October 10. Future trips to other industrial plants are planned by the Association.

Program Chairman D. M. Hill first introduced E. W. McAllister of the Kettleman North Dome Association Producing Department, who gave an excellent paper, illustrated by slides, on the subject of "Measurement of Crude Oil Having Gas in Solution". This feature will appear in *Western Gas* for Decemeber.

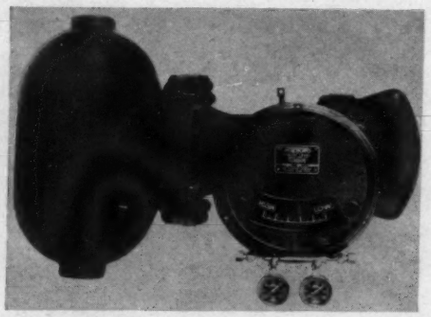
Visitors at the October 24 meeting included two members of the staff of The Australian Gas Light Co., from Sydney, New South Wales—C. C. Challis, controller of testing and research, and J. A. Barr, superintendent of service. Mr. Challis favored the meeting with an informal talk on gas practice in Australia, mentioning as one item of interest that rotary type wet meters are generally used in Australia for domestic consumers.

Concluding the meeting, P. W. Hill of the General Petroleum Corp., gave a practical exposition of the procedure involved in using the new orifice meter data. Mr. Hill

had prepared several illustrative examples of orifice meter volume calculations, using the new methods developed by the joint committee of the S.C.M.A., C.N.G.A. and P.C. G.A., of which Mr. Hill is a member. These examples were distributed in mimeographed form to those present.

Foxboro Co. Introduces Ball Float Level Stabilog

The Foxboro Co., Foxboro, Mass., announces the development of a new type of liquid level control instrument, featuring the "Stabilog" system of control added to a specially designed friction-free ball float mech-



anism. A knife-edge bearing is employed, and the steel ball float is counterbalanced by movable weights to insure maximum accuracy.

Known as the Foxboro Ball Float Level Stabilog, the new instrument is adaptable to any type of installation; it may be installed with the ball float inside the pressure vessel, or on the outside with a kidney type float chamber.

New Fire Extinguisher for Gas Fires

GARRISON Engineering Corporation, Great Barrington, Mass., has introduced a new type of fire extinguisher known as DuGas. The extinguishing material consists of a dry powder that is shot at the base of the flame and that upon contact with the fire liberates carbon dioxide. In the smaller hand models, the powder is forced out by manual pump action. In the larger models the powder is expelled by liberating carbon dioxide from a cylinder of the compressed gas, contained within the apparatus, by means of a valve.

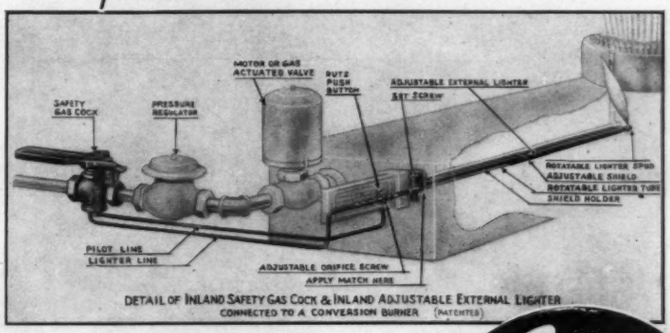
The new extinguisher is particularly effective in combatting gas fires as the powder can be directed at the base of the flame and virtually forms a blanket of carbon dioxide between the gas and the base of the flame. DuGas has been adopted for use on the Lone Star Gas Co. system where it has successfully put out fires in bell holes under gas pressures as high as 200 pounds.

Burke, Crane Industrial Sales Mgr.

Edmond Burke, formerly in charge of gas and oil industry sales for the Crane Co., Chicago, has been appointed manager of industrial sales for the company effective November 1. W. H. Pape, in charge of oil industry sales in the Mid-Continent and Gulf Coast areas, succeeds to Mr. Burke's former position.

INLAND *Safety* GAS COCK
AND ADJUSTABLE EXTERNAL LIGHTER

The NEW *development*—
YOU'VE HEARD SO MUCH ABOUT



DETAIL OF INLAND SAFETY GAS COCK & INLAND ADJUSTABLE EXTERNAL LIGHTER CONNECTED TO A CONVERSION BURNER (PATENTED)

"ENTER OUR ORDER FOR 13,000"
. . . Says One Leading Gas Company

Here's news—here's evidence that warrants your investigating. These two innovations—the Inland Safety Gas Cock and Adjustable External Lighter—were a sensation of the recent A.G.A. Convention. The largest utility companies are adopting them as standard equipment for all gas burner installations.

Absolutely safe—they eliminate all danger of "blows" while lighting. So simple any homeowner can turn burner on or off at will without slightest risk. Entirely fool-proof—they reduce service and maintenance costs to a minimum. Positive in action—the Safety Gas Cock automatically locks lever in position. At CLOSED—all gas is shut off. At START—permits passage of gas to pilot and lighter only—burner is shut off. At OPEN—lighter is shut off and gas flows to pilot and burner only. Length of lighter tube and shield are adjustable—lighter flame can be directed to any angle. The Inland Safety Gas Cock and Adjustable External Lighter will do more to stimulate gas burner installations than anything you've ever seen.

Eye WITNESS DEMONSTRATION

Because an eye witness demonstration resulted in the placing of an order for 13,000 we urge you to convince yourself. Write today for full details on our demonstration offer. A complete unit will be sent you on memorandum.

Send for our illustrated folder describing the complete line of INLAND Gas Specialties—Unit Heater — Hanger and Canopy—Automatic Switch for Unit Heaters — Fire Door Assemblies and Copper Fire Pot Coils.

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By using both gas and gasoline for fuel, power users profit through favorable price fluctuations and cut fuel bills to minimum. The Ensign Carburetor uses both fuels, changing instantly from one to the other without shutting down.

Ask for particulars.

Ensign Carburetor Company, Ltd.
Pioneers in the Development of Precision Carburetting Equipment
P. O. Box 606 (Los Angeles Suburb)
Huntington Park, California

Uses Gas and Gasoline!

ENSIGN COMBINATION GAS AND GASOLINE CARBURETOR

Wedgewood 1936 Ranges Have Low Oven Heat Control

James Graham Manufacturing Co., announces its new 1936 Wedgewood model equipped with low oven heat control. The new models are stream-lined and are finished in either pure white with black base or all ivory with black trim. A table-top model is also available with a kitchen heater, making a six-place cooking top. The various models for 1936 are described in literature now being issued by the manufacturers.

C. N. G. A. to Hold Annual Fall Meeting Nov. 11

ANNUAL Fall Meeting of the California Natural Gasoline Association will be held on the first day of the A. P. I. Convention, November 11, at the Biltmore Hotel in Los Angeles. At the morning session, Dr. Gustav Egloff of Universal Oil Products Co., will present a paper on the accomplishments that have been made in the utilization of butane, propane and isobutane to form high octane gasolines by the polymerization process. Dr. G. G. Brown, of University of Michigan, will discuss the rectification of straight run gasolines to remove isobutane and lighter fractions and the addition of natural gasoline.

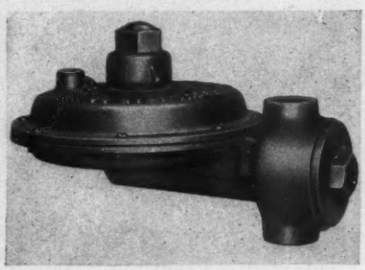
The afternoon session will consist of a review of the Association's technical studies. W. E. Helmick, of Shell Oil Co., will discuss the method developed for applying super-compressibility factors in the measurement of natural gases under high pressures. R. R. Crippen, of Texas Co., will summarize the new C. N. G. A. Reid Vapor Pressure Bulletin. C. D. Gard, of Union Oil Co., will discuss the general problem of proper sampling procedure in connection with the charcoal test. H. J. Multer, also of Union Oil Co., will present improvements in the 30-pound-32° F. pressure distillation procedure, and a discussion of a method of rectifying charcoal test condensates to a constant vapor pressure. P. W. Hill, of General Petroleum Corp., will conclude the session with a discussion of the new developments in orifice meter standards.

The meeting will close with a banquet at 7:30 p.m.

Reynolds Announces New Improved Model 10 Regulator

REYNOLDS Gas Regulator Co., Anderson, Ind., announces its new improved Model 10 regulator, illustrated above. It is designed so as to afford automatic loading of the outlet or delivery pressure, or it can be made to hold a uniform straight-line performance.

The improved Model 10 regulator is



equipped with a long, flexible helical spring. However, the top is so designed that the overall dimension from top to bottom is no greater than in the original Model 10 series. The spring is removable without removing regulator top.

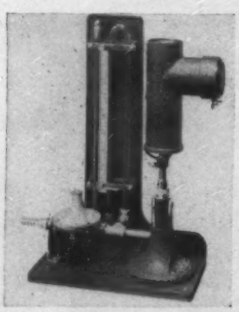
All parts are interchangeable and non-corrosive; and the working parts of the improved model can be used in any original Model 10 regulator. The improved Model 10 regulator is manufactured in dead weight or spring type, with or without mercury seal, in all pipe sizes for ¾-inch to 2-inch inclusive.

Linde Air Products Co. Conducts Welding Clinics

The Linde Air Products Co., New York City, is concluding two welding clinics, the first of which was held from October 23 to 26 in Sam Houston Convention Hall, Houston, Texas, and the second from October 30 to November 2 at the Georgia School of Technology, Atlanta, Ga. Daily programs included individual instruction in all types of oxy-acetylene welding and cutting, demonstrations, discussion groups, and motion pictures.

Kerotest Names Wisconsin Distributor

Kerotest Manufacturing Co., Pittsburgh, Pa., announces the appointment of the Andrae Auto Supply as jobbers in Madison, Milwaukee and Green Bay, Wisconsin, Substantial stocks will be carried at both the Madison and Milwaukee places of business.



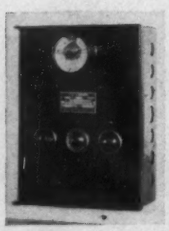
CONNELLY CALOROPTIC BTU INDICATOR AND ALARM SYSTEM

Determines the heat value of any kind of gas. SIMPLE, ACCURATE, CONVENIENT. No lag in reading.

Photo Electric Cell and Signal Unit indicate the direction and amount of any change in B.t.u. When any set limit is exceeded warning lights show and alarms are sounded. Especially valuable on mixed gas installations.

Dial indicator showing trend of B.t.u.'s available without alarm system, at low cost.

Write for four page descriptive bulletin; also for information on Connelly Regulators and Back Pressure Valves.



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U. S. PIPE & FOUNDRY COMPANY

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Sales Offices and Foundries Throughout the United States

BUTANE-PROPANE NEWS

Department of Agriculture Bottled Gas Range Tests Making Progress

U. S. Department of Agriculture is conducting a bottled gas range efficiency test at the School of Gas Engineering of Johns Hopkins University, Baltimore, Md. The purpose of the test is to obtain information for use in a bulletin to be issued by the Department on the general subject of bottled gas for domestic purposes.

Arthur Sanner, an engineer of the Department of Agriculture, is in charge of the test work, in which several appliance manufacturers and bottled gas marketers are cooperating.

After the range efficiency tests have been completed, the equipment will be moved to the Bureau of Home Economics at Washington, where the staff of Dr. Louise Stanley, in charge of the Bureau, will conduct extensive cooking tests.

A. N. Kerr Returns from Visit Through Western Canada

A. N. Kerr, president of the Imperial Gas Co., Los Angeles, on October 5 returned from a three weeks trip through Western Canada. Mr. Kerr visited the Canadian Rock Gas Co. of Vancouver and Victoria, subsidiary of Imperial Gas Co., for which British Columbia Rock Gas Co. is distributor. During his trip Mr. Kerr also visited the Turner Valley oil fields in Alberta.

Customer Campaign and Survey

An eleven-weeks sales campaign, combined with a painstaking customer survey, was begun by the Philgas Department of Phillips Petroleum Co. on October 14. It is expected that statistics obtained from the survey will give further insight into the problems of building additional bottled gas load and of increasing customer satisfaction.

S. A. E. Pacific Coast Regional Meeting

The Pacific Coast Regional Meeting of the Society of Automotive Engineers will be held in San Francisco November 18 and 19. Among the papers to be presented at the meeting will be "Butane Application and Performance in Automotive Service" by P. W. Ensign, Ensign Carburetor Co., Ltd., Los Angeles.

C.G.M.A. Luncheon Meeting

The Compressed Gas Manufacturers' Association held a luncheon meeting October 17 at the Hotel Roosevelt in New York. E. M. Allen, president of the Matheson Alkali Works, Inc., was the principal speaker.

Bulk Station at Lincolnton, N. C.

A bulk station for the distribution of bottled gas is being completed at Lincolnton, N.C. M. M. Rudisill, formerly connected with Rulane Gas Co., Cherryville, N.C., is the organizer of this project.

Aggressive Sales Promotion Accompanies Introduction of Butane-Air Gas in Southern Oregon

FOLLOWING recent introduction of 900 B.t.u. butane-air gas to replace the manufactured gas formerly served, Southern Oregon Gas Corp. has inaugurated an intensive campaign for new business, predicated upon new low rates and betterment in service.

J. A. Ward

The company, operated by Republic Management Co., Ltd., of San Francisco, serves Medford, Ashland, Grants Pass and Roseburg, Ore. J. A. Ward is president, Edw. A. Grens is in charge of merchandise activities, D. E. York is vice-president and general manager with headquarters in Medford.

In its current drive for appliance sales the company is utilizing colorful outdoor posters, large newspaper advertising space, bill stickers and mail folders. September and October copy announced "New Low Heating Rates" in all four communities served.

This campaign was immediately followed by announcements of new reduced general rates, and the sales objectives were widened to include cooking, water heating, refrigeration and industrial and commercial installations.

"Petroleum Natural Gas" is the term adopted by this company for its new butane-air gas. The Oregon plants and distribution systems have been completely reconstructed. Butane-air gas was first installed by the Republic Management Co., Ltd., at its Needles, Calif., plant, the successful results in this town leading to its adoption in Oregon.

The system, as applied to the distribution of butane-air gas in these towns, is unique and is believed to be the first of this kind in use. Butane is received in tank cars and transferred to tank storage under pressure. It is piped from these storage tanks through ¾-inch copper tubing to district stations, located at advantageous points throughout the distribution system, where the butane is mixed with air and discharged under pressure, through the use of the energy in the butane itself, into the distribution system at a maximum pressure of 1½ pounds and a B.t.u. content of 900. These district stations are automatic in their operation, maintaining a uniform B.t.u. content of the gas and a uniform pressure in the distribution system.

By establishing the heating value of the butane-air gas at 900 B.t.u. it is possible, at any time in the future, to substitute 550 B.t.u. water or oil gas for butane-air gas without the necessity for making any changes in customers' appliances or equipment. This has also been true in the conversion from 550 water or oil gas to the new gas, only minor adjustments in customers' appliances having been found necessary.

Gratifying results are already evident from the company's sales work, with a number of industrial and heating loads added to the lines.

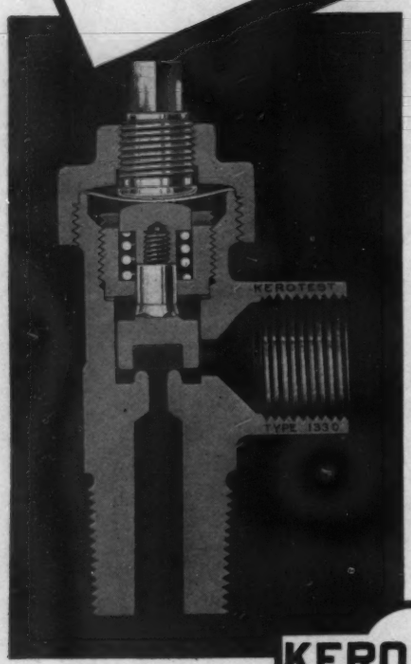
Stand-By Installation at Allentown

An industrial propane stand-by installation, of tank-car capacity, has been made by the Allentown-Bethlehem Gas Co., Allentown, Pa., a United Gas Improvement Co. subsidiary.

KEROTEST

PROPANE CYLINDER VALVES

DIAPHRAGM PACKLESS



EXCLUSIVE features make Kerotest Diaphragm Packless Valves ideal for propane gas service . . . the one and only valve that can be inspected and serviced while under full pressure "on location" and without removing the valve from the cylinder.

It is equipped with a heavy stainless steel spring which reciprocates the movement of the handwheel.

The patented non-rotating spindle eliminates wear at the seat and provides a pressure-tested metal to metal backseat when the stem is in full open position. Available in Type 133A with handwheel—POL female L.H. Outlet. Type 133D without handwheel—POL female L.H. Outlet. Listed as standard by underwriter Laboratories—meets Bureau of Explosives Specifications.

Investigate this outstanding Kerotest achievement in valve design TODAY! Write for descriptive literature.

KEROTEST

KEROTEST MANUFACTURING CO.
PITTSBURGH, PENNSYLVANIA

MUELLER GAS DISTRIBUTION EQUIPMENT

The time-tested Mueller line includes Mueller Evenflow Service Regulators, Gas Stops, Service Stops, Stove Stops, Drilling and Tapping Machines, service boxes, meter trims and a wide range of equipment, tools and supplies for gas distribution service. Write for description and prices.

MUELLER CO., Decatur, Ill.

Factories: Decatur, Ill.; Chattanooga, Tenn., Los Angeles, Calif.; Sarnia, Ont.
Branches: New York and San Francisco.

Nance New District Manager in Imperial Valley

R. L. Nance has been appointed district manager of the Natural Gas Corp. of California in Imperial Valley, and took over his new duties September 1. Mr. Nance succeeds R. L. Hayden, who was recently promoted to the position of Northern Division manager of the Coast Counties Gas & Electric Co., an affiliated company, making his headquarters at Martinez.

Previous to his new position in Imperial Valley, Mr. Nance was connected with the Natural Gas Corp. of Oregon and the Natural Gas Corp. of Washington, in charge of their butane properties in these states. He has been with the two companies since January 1, 1931. Immediately preceding this he was with the Los Angeles Gas and Electric Corp.

International Acetylene Association's 36th Annual Convention

The International Acetylene Association will hold its 36th Annual Convention November 12 to 15, at Hotel Cleveland, Cleveland, Ohio. Among the papers to be presented at the convention will be "Prevention of Welding and Cutting Fires," C. D. Abbott, district manager, Associated Factory Mutual Fire Insurance Companies, Cleveland; "Safe Handling, Storage and Return of Compressed Gas Containers," F. R. Fetherston, secretary, Compressed Gas Manufacturers' Association, New York City; "Hydrocarbon Fuel Gases for Cutting," Dr. Geo. Slottman, Air Reduction Sales Co., New York City; and "Gas Welding Aluminum and Its Alloys," G. O. Hoglund, supervisor of welding, Aluminum Co. of America, New Kensington, Pa.

Republic Steel Corp. Advertising Campaign Awarded 1st Prize

For the most outstanding advertising campaign of the year in the field of metals Republic Steel Corp. was awarded first prize at the 13th Annual Conference of the National Industrial Advertisers Association held at Pittsburgh on September 18, 19 and 20.

S. A. Knisely, advertising and sales promotion manager of Republic, states that the prize-winning campaign was created and placed by G. M. Basford Co., industrial advertising agency, with offices in New York and Pittsburgh.

Gas Used in Arsenic Refining at Seattle Plant

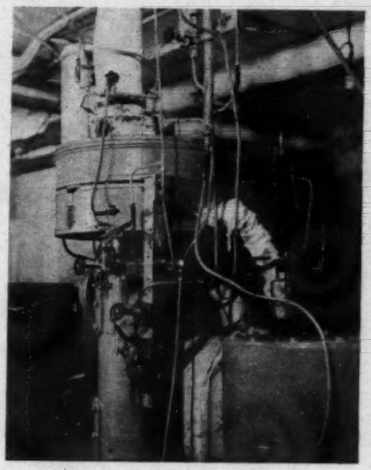
Gas is used in the refining of arsenic residues at the American Smelting and Refining Co.'s plant at Seattle, Wash., which produces 1/12 of the nation's refined copper. Prior to the installation of gas it was necessary to run the arsenic through the refining cycle several time's before it could be obtained pure. Gas is said to have cut re-runs down from 30 per cent to 5 per cent.

Murray Appointed Grants Pass Manager

Lon Murray, formerly sales manager for the Marvel Manufacturing Co., Los Angeles, has been appointed manager of the Grants Pass office of the Southern Oregon Gas Co. Mr. Murray succeeds Fred Anderson, who resigned recently.

Podbielniak Announces New Type Distillation Apparatus

Podbielniak Industrial Research and Engineering Laboratories, Chicago, has developed a "Centrifugal Counter-Current Super-Contactor", an apparatus for precise fractional distillation. The device differs from



Centrifugal Counter-Current Super-Contactor.

other equipment in its field in that it substitutes centrifugal force for gravitational force, resulting in economy of space.

The new apparatus will be demonstrated at the 15th Exposition of Chemical Industries to be held in New York City December 2 to 7. The Podbielniak Laboratories' new automatic "robot" model L apparatus will also be displayed together with other equipment.

Philgas Issues Propane Bulletins

Two new bulletins on industrial propane have been issued by the Philgas Department of Phillips Petroleum Co. They are No. 55, "Combustion Properties of Industrial Propane;" and No. 56, "Industrial Propane Used for Many Different Purposes at Steel Foundry." Interested persons may obtain copies from the Philgas office in Detroit.

N.F.P.A. Committee on Gases Meeting

Fall meeting of the Committee on Gases of the National Fire Protection Association is tentatively scheduled to be held at Detroit, November 7 and 8. The meeting will be devoted to discussion of current problems of the liquefied petroleum gas industry and to the inspection of industrial and bulk station installations.

Oliphant Joins Pittsburgh Equitable

F. H. Oliphant, for the past 15 years sales engineer for the Metric Metal Works of the American Meter Co. in Erie, Pa., has joined the sales force of the Pittsburgh Equitable Meter Co. and its subsidiary, Merco Nordstrom Valve Co., in the capacity of national sales representative.

Ward to Circularize Architects

Ward Heater Co., Los Angeles, will shortly begin a direct by mail campaign on architects and builders west of the Mississippi.

MOST POPULAR OF ALL

Hackney Liquefied Petroleum Gas Cylinders are preferred for their uniform quality, and superior design. Built by Pressed Steel Tank Company with long and wide experience in the design and fabrication of cylinders for many uses.

Hackney cylinders for Propane, Butane and Butane-Propane mixtures are not only popular—*they dominate the field.* There are twice as many in service as all others combined.

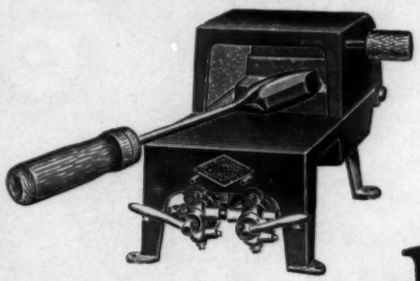
They serve such leaders as — Shell, Standard, Skelly, Phillips, Lone Star, and others. They are the "buy" of the field.

Pressed Steel Tank Company

208 S. La Salle St. Bldg., Room 1185, Chicago, Ill.
6633 Greenfield Avenue, Milwaukee, Wisconsin
1363 Vanderbilt Concourse Bldg., New York, N. Y.
666 Roosevelt Bldg., Los Angeles, California

Hackney
MILWAUKEE

CONTAINERS FOR GASES. LIQUIDS AND SOLIDS



JOHNSON
No. 101
BENCH FURNACE

One of the most popular bench furnaces on the market. Quick, handy, economical, inexpensive. No blower needed. Deserves a place on every work bench. Write for full details.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Western Representative:
C. B. BABCOCK CO.
135 Bluxome Street
San Francisco, Calif.

Eastern Representative:
J. H. McPHERSON
250 Stuart Street
Boston, Mass.

ALL YEAR HOME
of
Mr. and Mrs. Colin Livingstone
Lake Shore Road, Lake Oswego
Portland, Oregon
Architect—ERNEST F. TUCKER

A year around delight, thanks to the thermostatically-controlled gas furnace; 30-gallon storage water heater; and gaily-gleaming (quick heat) gas range. Fifteen minutes from the heart of Portland, this charm-house links lakeside recreation with metropolitan convenience—including ample, instant hot water for two adults, two children and maid.

$6.16 PER MONTH...*for*

all the joys of modern gas heat

The gas furnace in this Oregon home was operated at a total fuel cost of $73.90 for the twelve months ending July 31, an average of only $6.16 a month.

Quick, clean, dependable, it guards family health and comfort... delivers uniform heat to every room... at the exact temperature selected by setting a tiny regulator on the wall.

Finger-tip control. No work, no ashes, smoke or soot. Just solid comfort that enhances the joy of living... *at modest cost.*

NEITHER BASEMENT NOR FURNACE PIT IS NEEDED with the new, compact, fan-type units which fit into any nook or closet, either downstairs or up. Nor with gas floor furnaces... radiant or circulating heaters... or gas radiators that warm any or all rooms at will. *Have you a basement?* Transform it into a playroom, den, shop or recreation hall by changing to clean, automatic gas heat. New, improved, economical gas appliances suit every home and budget... displayed by your Gas Company or Appliance Dealer now.

MODERNIZE WITH GAS... FOR HEATING, COOKING, WATER-HEATING, REFRIGERATION. NEW, LOW PRICES AND TERMS. FHA LOANS.

Quick Clean Economical **Gas** *the modern fuel*

PACIFIC COAST GAS ASSOCIATION, INC.
(A non-profit service organization of which your Gas Company is a member) 447 Sutter St., San Francisco, Calif.

COASTWIDE

DOMESTIC-CONSUMER ADVERTISING

The Cooperative Load-building Program of the gas industry is representative of the entire Pacific Coast.

This advertisement, recently published in "Sunset" Magazine (200,000 circulation) helps to sell gas heating in San Diego and Seattle and all communities between—including Portland, site of the featured home.

PACIFIC COAST GAS ASSOCIATION
(A non-profit service organization of which your gas company is a member)
447 SUTTER STREET
SAN FRANCISCO, CALIFORNIA

With the ASSOCIATIONS

"Geology of Natural Gas" Published By Assn. of Pet. Geologists

"Geology of Natural Gas", edited by Henry A. Ley, has been published by the American Association of Petroleum Geologists. The book is a symposium of 38 papers contributed by 47 authors, and deals with practically all the commercial gas fields in the North American continent. Each region is dealt with from the standpoint of the history of its development, geologic characteristics, well depths, pressures, open flow, costs, analysis of the gas, pipe lines, etc.

Chapters on "Valuation of Natural Gas Properties", "Estimation of Natural Gas Reserves", "Geology of Natural Gases Rich in Helium, Nitrogen, Carbon Dioxide and Hydrogen Sulphide" and "Natural Gas" conclude the book. "Natural Gas", contributed by Henry A. Ley, contains a resume of the natural gas industry and related subjects.

Comprehensive bibliographies supplement the papers and the book throughout is amply illustrated with maps, cross sections showing geologic structure, diagrams and tables.

P.C.G.A. Transmission Committee Organized for Year's Work

Sub-committee chairmen for the 1935-1936 Transmission Committee of the Pacific Coast Gas Association's Technical Section are announced by A. B. Allyne, Transmission Committee chairman, as the following:

Pipe protection: C. P. de Jonge, San Diego Consolidated Gas & Electric Co., chairman.

Compressor Plants and Pipe Lines: C. E. Pickup, Southern California Gas Co., Los Angeles, chairman.

Calorimetry: Guy Corfield, Los Angeles Gas and Electric Corp., chairman.

Orifice Meter Standards: P. H. Fisher, Coast Industrial Gas Co., Pittsburgh, Calif., chairman.

Missouri Association of Public Utilities Educational Campaign Continues

Missouri Association of Public Utilities started its fourth year of educational advertising recently with 60 inches of newspaper space as its initial installment. Last year the Association's copy appeared on an average of a little more than once a month. The copy is information in the main, dealing with the service utilities render the communities, and is appearing in 535 daily and weekly newspapers throughout the state.

Public Utilities Association of W. Va. Elects New Officers

At the annual meeting of the Public Utilities Association of West Virginia, F. W. Samworth, president of Ohio Valley Electric Railway Co., was elected president of the organization. Other officers elected were A. J. Darrah, vice-president; J. K. Buchanan, vice-president; A. Bliss McCrum, secretary; and G. B. Moir, treasurer. The newly elected officers assume their duties December 1, 1935.

Wisconsin Technical Men Meeting November 11-12

THE Technical and Operating Section of the Wisconsin Utilities Association will hold its annual convention at Northland Hotel, Green Bay, Wis., on November 11 and 12. The convention will open with a joint session of the Gas Division and Electric Division on Monday morning. Among the papers to be presented at the joint session are "Coordinating Technical and Sales Efforts", G. V. Rork, president of the Association; "Legislation Affecting Utilities", A. J. Whitcomb, The Milwaukee Electric Railway & Light Co.; and "Possible Operating Problems as Result of Promotional Activities", Voyta Wrabetz, chairman, Industrial Commission, Madison.

The Monday afternoon Gas Division session contemplates reports of representatives on the A. G. A. Managing Committees, and presentation of the following papers: "Coal as a Generating Fuel", L. J. Willien, Byllesby Engineering & Management Corp., Chicago; "The New Gas Flood Light", W. M. Blinks, General Gas Light Co., Kalamazoo, Mich.; "Why Production and Distribution Unless . . . . ?", F. C. Armbruster, Middle West Utilities Co., Chicago; "The Measurement of the Specific Gravity of Gases", Professor O. L. Kowalke, University of Wisconsin, Madison; and a discussion of bargain rates by H. I. Miller, Wisconsin Public Service Co., Oshkosh.

For its Tuesday morning session the Gas Division plans a Round Table discussion on several topics. The discussion on production will be led by Frank Wilkinson, Northern States Power Co., La Crosse; distribution, Lester Wuellner, Wisconsin Fuel & Light Co., Manitowoc; services and meters, E. C. Hemes, Milwaukee Gas Light Co.; and servicing appliances, N. P. Mueller, Milwaukee Gas Light Co.

Calendar

November

Mid-West Gas Association — Fifteenth Gas School and Conference, Iowa State College, Ames, Iowa, November 6-9.

National Fire Protection Association—Fall Meeting of Committee on Gases, Detroit, Mich., November 7, 8.

California Natural Gasoline Association—Fall Meeting, Biltmore Hotel, Los Angeles, Calif., November 11.

Wisconsin Utilities Association, Technical and Operating Section—Annual Convention, Green Bay, Wis., November 11-12.

American Petroleum Institute—16th Annual Meeting, Biltmore Hotel, Los Angeles, Calif., November 11-14.

International Acetylene Association—36th Annual Convention, Hotel Cleveland, Cleveland, Ohio, November 12-15.

American Institute of Chemical Engineers—Annual Meeting, Columbus, Ohio, November 13-15.

December

American Society of Mechanical Engineers—Annual Meeting, Engineering Societies Building, New York City, December 2-6.

15th Exposition of Chemical Industries—Grand Central Place, New York City, December 2-7.

January, 1936

National Warm Air Heating and Air Conditioning Association—Convention, Hotel Stevens, Chicago, Ill., January 27-30.

American Society of Heating and Ventilating Engineers—Annual Meeting, Palmer House, Chicago, Ill., January 27-31.

Program Ready for 15th Conference at Ames

THE Mid-West Gas School and Conference conducted annually by the Mid-West Gas Association and Engineering Extension Service of Iowa State College, will be held November 6 to 9 at Ames, Iowa. Robert L. Klar, engineer for the Des Moines Gas Co., is chairman of this year's conference, which is the 15th consecutive one to be held.

The papers to be presented are the following:

"Comparison of Pressure Method and Direct Method of Conversion," by T. J. Conway, Minneapolis Gas Light Co., Minneapolis, Minn.

"Condensation in Chimneys," by R. F. Galpin, Iowa Electric Co., Muscatine, Iowa, and Prof. Paul E. Cox, head, Ceramic Engr. Dept., Iowa State College.

"Molecular Construction of Gases," by A. D. MacLean, Pittsburgh Equitable Meter Co., Pittsburgh.

"Odorization of Gas," by M. M. Wilson, The Sharples Solvents Corp., Chicago.

"Protection Measures and Methods for Reducing Unaccounted-For Gas," by H. R. Mathias, Standard Oil Co., Chicago.

"Protection Measures and Methods for Reducing Unaccounted-for Gas," (continued), by Fred O. Paige, The Kitson Co., Philadelphia.

"Latest Word on Orifice Meter Measurement," by L. K. Spink, The Foxboro Co., Foxboro, Mass.

"Education of Public on Handling Heating Equipment," by A. C. Grant, Minneapolis-Honeywell Regulator Co., Minneapolis.

"Service Regulators or Appliance Regulators for Perfect Control," by Blanchard Smith, Reynolds Gas Regulator Co., Anderson, Ind.

"Controls on Gas-Fired Boilers," by Kenneth R. D. Wolfe, Fisher Governor Co., Marshalltown, Iowa.

"Mixing Gases and Meeting the Peak Load," by L. J. Eck, Minneapolis Gas Light Co., Minneapolis.

"Air Conditioning, Domestic," by John Norris, Lennox Furnace Co., Marshalltown, Iowa.

..Select PAYNE Heating Appliances

■ The quality and efficiency of all Payne heating equipment reflects twenty-one years of experience in designing, manufacturing and installing gas burning appliances of all types. Select PAYNE for your heating needs.

Forced Air Units.
Floor Furnaces.
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Beverly Hills · California

Corrosion Problems on a Rocky Mountain Line

(Continued from Page 19)

and of the primary rocks from which the sediments are derived is necessary. For this article it is sufficient to state that our experience to date indicates that those formations which in the process of deposition stored up the greatest amount of the alkaline salts, particularly the salts of sodium, calcium, potassium, and magnesium, appear to be most active in pipe line pitting. Experience to date would indicate that the filtration of even relatively small amounts of moisture into the salt laden soils and rocks of certain geologic formations is sufficient to initiate an electrochemical reaction that is highly corrosive in effect. The relationship of this electro-chemical action, which is apparently dependent largely on the character of the rock and soil and the pipe line trench drainage, to the long line electric currents is not yet fully understood and additional experimentation will be necessary to determine this point.

To date, it would appear that a pipe covering and wrapping sufficiently pliable to withstand the heavy soil stresses peculiar to this Rocky Mountain territory, together with an external protective covering that will also afford satisfactory insulation against electrochemical activity and stray ground currents is necessary to retard pipe corrosion. Since it is probably impossible to achieve perfect insulation, the addition of cathodic protection in certain "hot spots" may also be necessary.

Wyoming-Nebraska Line

(Continued from Page 23)

near Fort Laramie, Wyo., by the 10-inch line. Single lines were used in the river crossings, the sections being welded and weighted with river clamps. Many minor special construtction problems had to met due to irrigation ditches and side-hill and rocky terrain. The reconditioned pipe was all strung from Casper with trucks, some of it having been hauled over 200 miles.

When the line is completed it will operate at a working pressure of 400 pounds per sq. in.

At Clayton the new line takes off from the Northern Utilities Co. line which draws gas principally from the Sandraw, Muskrat and Boone Dome gas fields. The North Central line will carry natural gas to the towns of Douglas, Wheatland, Guernsey, Fort Laramie, Lingle and Torrington in Wyoming, and to Henry, Morrill, Mitchell, Scottsbluff, Gering. Minatare, Bayard, Bridgeport, Northport, Broadwater, Lisco, Oshkosh and Lewellen in Nebraska.

Allington Joins Blaw-Knox

Blaw-Knox Co., Pittsburgh, Pa., announces that J. B. Allington has joined the company's sales force and will be engaged in sales and service work in connection with the gas conditioning division. For the past 15 years Mr. Allington has been with the Rochester (N. Y.) Gas & Electric Corp. in the capacity of industrial sales engineer.

MODERN METHODS AND MATERIALS

A letter to WESTERN GAS will bring you any of the selected reference bulletins listed below, without cost. Indicate by number which you desire.

NO. 87—WATER HEATER INSTALLATION
Detailed procedure for installing automatic gas water heaters, supplemented with diagrams. Instructions for flue connections, starting heater, temperature adjustment and cleaning.

NO. 88—DUST FILTERS
Gas filters for individual appliances and house service lines. Bulletin containing cross section drawings and table of sizes for given capacities.

NO. 89—BURNER INSTALLATION
Folder covering installation and use of conversion burner equipment in commercial applications.

NO. 90—CONTROL INSTRUMENTS
Booklet describing line of air operated recording controls for regulating temperature, pressure, flow and liquid level.

NO. 91—INDUSTRIAL INSULATING
Brochure covering complete line of insulating materials for industrial applications such as flooring, roofing, industrial furnaces and ovens, ceramic kilns, gas making equipment, etc. Contains specifications and installation drawings and photographs.

NO. 92—WATER GAS PRODUCTION
Bulletin describes equipment and new process for water gas production from high carbon oils. Tables showing operating cycle and production data.

NO 93—PRESSURE REGULATORS
Line of automatic pressure regulators covered in a 74 page catalogue illustrated with cut-away drawings and containing capacity charts for sizing regulators, tables and related technical data.

NO. 94—PIPE INSTALLATION WELDING
Booklet dealing with new method of welding pipe in indoor installations, illustrated with photographs of typical installations. Also covers welding of copper and brass by special process.

NO. 95—GAS RANGE MANUAL
Manual on installation, maintenance and operation of gas ranges for servicemen and salesmen, illustrated and compiled in question and answer form.

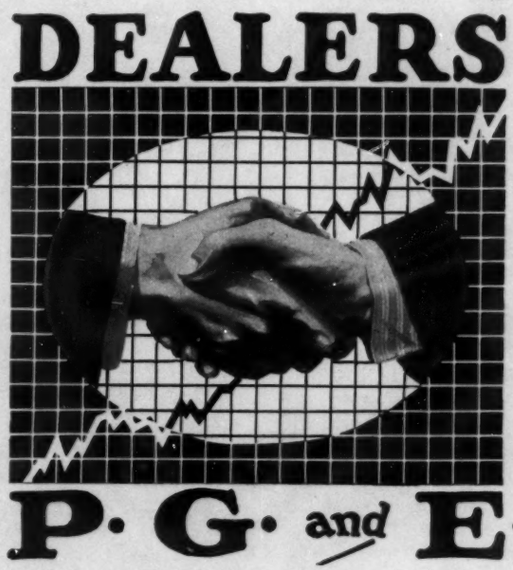
NO. 96—SINGLE-STAGE COMPRESSORS
Bulletin illustrated with drawings and photographs describing 5-, 7-, 9-, 11- and 13-inch stroke single-stage, steam and motor driven compressors. Contains tables of specifications.

NO. 97—POTENTIOMETER CONTROLS
Detailed description and installation diagrams in a 20-page bulletin of a line of non-recording potentiometer and resistance thermometer controls.

No. 4 of a series
calling your attention to the Pacific Gas and Electric Company's 1935 planbook "In Gear."

WHAT THE FUTURE HOLDS

How big is the market for gas appliances? How soon will it reach the saturation point? What types of appliances offer the greatest sales possibilities? Answers to questions like these have always been hard to get. There has been no machinery for gathering the facts and interpreting them. Now, we are happy to say, there is. All necessary data is being supplied through the Appliance Survey. Reports are coming in at the rate of 5000 a month. As fast as they arrive, our Market Research Bureau compiles them and tabulates the figures. Already we know what is being used and what is needed in 173,000 homes. Eventually we shall "have the picture" in 370,000 homes. Of course, it will be some time before our appliance inventory is complete, but right now we have enough data in hand to make reasonably exact estimates. In fact, we had enough at the first of the year and certain estimates were made then and published in our planbook "In Gear". Under the heading "What the Future Holds" we estimated the market for (1) major gas appliances, (2) small appliances, (3) installations. Sales were estimated both as to units and dollar volume. Separate estimates were also given for replacement business and new business. Every effort was made to keep these figures conservative. All in all, we believe we presented a fair picture of what the industry can do if it will. We earnestly hope that if you didn't read this chapter then, you'll do it now. And remember, special market data is always available on request.



EQUIPMENT DEALERS NOTE!

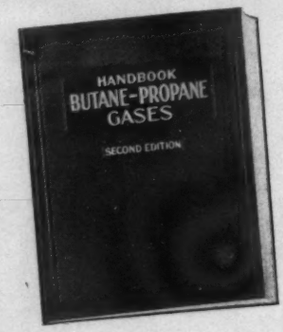
You might think, from our use of the term Appliance Survey, that we're neglecting the equipment markets. We're not! Special surveys are being made of the commercial market, the industrial market and the agricultural market. To date, we have received more than 15,000 reports on factory, store and farm. If you're directing your efforts at one or the other of these markets, we can assist you with a large and constantly growing fund of facts. Address: General Sales Manager, 245 Market Street, San Francisco.

PACIFIC GAS AND ELECTRIC COMPANY

Owned, Operated, Managed by Californians

WG 211-1135

THE ONLY HANDBOOK OF BUTANE–PROPANE GASES



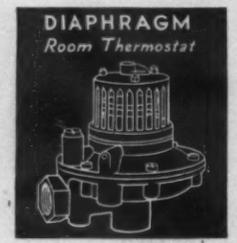
Big Second Edition Now Available

CONTENTS: Summary of Two Years' Developments: Use in Internal Combustion Engines: Design and Installation of Storage: Supply from Petroleum Refineries: Engineering Data on the Lower Olefins: Domestic Appliance Testing and Utilization: Economic Comparisons with Coal, Oil, Electricity, Producer Gas, Manufactured Gas: Town Plants: Manufacture from Natural Gas: Special Uses: Volume Correction Factors: Supplements and Revisions: Transportation: Use with Other Gases: Analysis and Testing: Properties of Mixtures: Bottled Gas Distribution: Bibliography: Central Plant Directory: Catalogue Section:

$5.00—Send Check or Money Order To

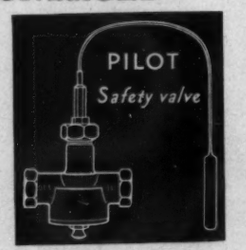
WESTERN GAS, *Publishers*
810 South Spring St.
Los Angeles, California

BUILD YOUR HOUSEHEATING LOAD WITH KLIXON CONTROLS

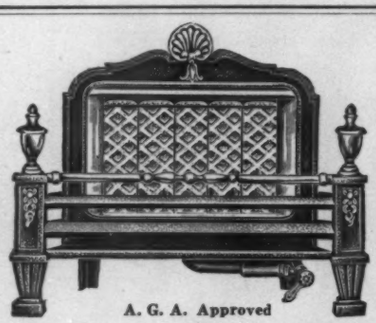


These two advanced Klixon devices give exact automatic temperature control and assure positive pilot protection for your gas-fired space heaters . . . provide sales features that make it easy to sell gas heating.

Write today for descriptive bulletins.



SPENCER THERMOSTAT COMPANY
Unit of Metals & Controls Corporation
34 FOREST STREET • ATTLEBORO, MASSACHUSETTS



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PEERLESS
RADIANT GAS HEATERS

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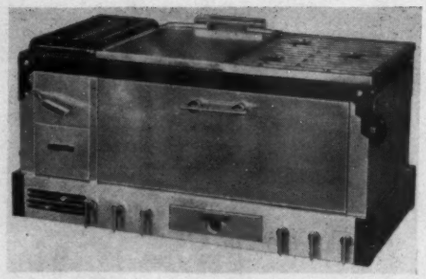
—will assist materially in your efforts towards "LOAD BUILDING"

You need have no fear of a service complaint on a PEERLESS

WRITE FOR DETAILS

PEERLESS MANUFACTURING CORP.
1400 W. ORMSBY
LOUISVILLE, KENTUCKY



Savory Announces New "Cooking Compact" Unit

Savory, Inc., Newark, N.J., is now manufacturing a new BG Savory "Cooking Compact" designed for short order food establishments. The outer shell is made of stainless steel with satin finish trimmed in chromium and black enamel. The new unit includes the Savory vertical radiant heater, boiler, warming oven with heat indicator, hot plate with gradual heat control and open burner top.

Fischer Resigns as President of Northern Natural

L. E. Fischer has announced his resignation as president of Northern Natural Gas Co., effective November 1, but will continue with the company in the capacity of consultant for the period of one year.

A new president of the company will not be elected for the time being, with F. H. Brooks continuing in his position as vice-president and general manager. John Merriam, assistant secretary of the company, will be transferred to the company's Omaha headquarters.

Mr. Fischer has been active head of the Northern Natural Gas Co. since its organization in 1930 and his resignation came as a complete surprise to the industry. It is understood that Mr. Fischer will devote most of his time in the future to other business interests.

Gas Co. of New Mexico to Serve Loving

Gas Co. of New Mexico, headquartering in Clovis, N.M., subsidiary of Southern Union Gas Co., is laying a distribution system in Loving, N.M., located approximately 18 miles south of Carlsbad and 3 miles off the Pecos Valley Production Co. 6-inch main line. It is expected that between 50 to 75 customers will be served, including an oil mill and a gin. This town will not have a local office but will be handled out of the company's Carlsbad office. Representatives are in the field selling appliances.

Coast Counties G. and E. Installing Gas Holders

Two new high pressure gas storage holders are being installed in Santa Cruz, Calif., for the Coast Counties Gas and Electric Co., according to A. R. Bailey, gas superintendent. These are horizontal tanks, one 64 by 16 ft., with a capacity of 50 M c.f. at 75 pounds pressure. The second tank is 41 by 10 ft., with a capacity of 12½ M c.f. at 75 pounds. Both will be used for natural gas storage purposes.

More Thought to the Sales Floor

(Continued from Page 22)

trance, and salesmen's invitations to "step back and look over our Model Kitchen." There is constant activity in the kitchen, actual sales being made there, as well as a general promotional program being carried on.

Operation of the sales floor is geared closely into the rest of the sales program. The outside salesmen use their days on duty at the floor for appointments with prospects which they have developed. About 85 per cent of the company's total range sales are closed on the floor.

With an avearge of about six salesmen, compared to the more than 30 on the outside residential force, the sales floor runs around 25 per cent of the outside group's results, measured in the e.a.r. value of appliances sold.

Since the sales floor contributes to the effectiveness of outside selling, and vice versa, the above results are not to be interpreted as indicating relative effectiveness of the sales floor and outside forces; rather, they are evidence of the fine coordination between the two, and show that the general load-building program is benefitting from the sales floor policies in use.

Pilot Stability

(Continued from Page 17)

From the data obtained and plotted on the accompanying graph (Fig. 1), it is clearly shown that pilot stability is proportional to both pressure and consumption. Also, the indications are that pressure plays a more important part than consumption. This seems to bear out good reasoning inasmuch as the higher the gas pressure at the pilot port the better is the chance to withstand a counter pressure resulting from a back flash bang.

Western United Fall Range Campaign Under Way

Western United Gas & Electric Co., Aurora, Ill., commenced its fall range campaign October 1, to run through Thanksgiving. The quota of ranges set for the period is 800. During the sale ranges priced for less than $100 may be sold for $5 down plus the old range. Ranges priced for more than $100 call for a down payment of $10 plus the old range. Terms extending over 18 months are given when desired under a carrying charge of 6 per cent per year.

Los Angeles G. and E. Planning $40,000,000 Issue

Plans of Los Angeles Gas and Electric Corp. to refund all of its bonded debt with a new $40,000,000 issue of first and general mortgage 4 per cent bonds, due 1970, were announced late in October by Addison B. Day, president of the company.

The completion of this refinancing will result in a reduction of $6,134,00 in the outstanding funded debt.

COMMERCIAL HEATING BULLETIN just off the press gives valuable information on such installations and N.G.E. Burners. Write for your free copy.

Illustrating the N.G.E. No. 313 Burner complete with burner casting, special refractory radiant and spud.

The N. G. E. No. 313 BURNER

FOR SQUARE OR RECTANGULAR FIRE BOX BOILERS. The No. 313 Burner is an upshot burner designed primarily for installation in cast iron or steel boilers with square or rectangular fire boxes.

OFFERS HIGH CAPACITIES. In proportion to the relatively small burner area and in comparison with other types of burners, the N. G. E. No. 313 offers extremely high capacities.

OPERATING PRESSURES. The burner units are simple, easy to install, and self-cleaning. They operate at all firing ranges quietly and without vibration and have very low turndown characteristics. The operating range, 2 inches of water to 2 pounds gas pressure, meets practically all requirements of commercial heating.

SPECIAL REFRACTORY RADIANT. The burner head is constructed so as to receive a special refractory radiant which has the advantages of offering incandescent radiant heat and of serving as a catalytic in high rate of BTU liberation.

MANIFOLDING FLEXIBILITY. In groups, these burners lend themselves to either parallel or right angle manifolding so that, having a given furnace width and depth, it is possible to predetermine which method is preferred. For best results these burners should be installed in front of furnace to allow longest travel of products of combustion.

CONTROL. The No. 313 lends itself to any type of control.

THESE FIRMS HAVE RECENTLY INSTALLED N.G.E. NO. 313 BURNERS

National Broadcasting Company Hollywood

Fox-Wilson Theater, Fresno, Calif.

Northrup Corp., Mines Field, Calif.

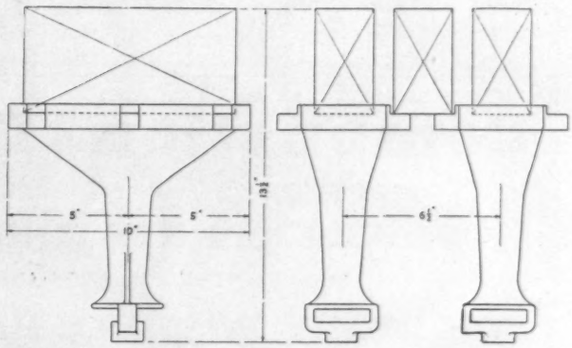
Zellerbach Paper Company Los Angeles

Tucson High School, Tucson, Ariz.

U. S. Veterans' Hospital San Fernando, Calif.

Tulare County Courthouse Tulare, Calif.

U. S. Spring & Bumper Company Los Angeles



Note from sketches how ideally a number of No. 313 Burners may be grouped in square or rectangular furnaces.

NATURAL GAS EQUIPMENT INC.

1123 Harrison St. San Francisco — Petroleum Securities Bldg. Los Angeles — Arizona Distributors Crane Co.

LOOK TO THE PIONEERS FOR CONTINUED LEADERSHIP

AIR CONDITIONING

Electrogas

HEATING EQUIPMENT

FURNACES BLOWERS FILTERS WASHERS

Write for attractive Dealer proposition

ELECTROGAS FURNACE & MANUFACTURING CO.

2575 Bayshore Boulevard, San Francisco

Oklahoma Natural Gas Co. Conducts Dealers' Dinners

OKLAHOMA Natural Gas Co., headquartering in Tulsa, conducted dinner meetings for dealers in each of its district office headquarter towns during September. At the dealers' dinners the company's sales program for the succeeding twelve months was outlined, then the meetings were turned over to general round-table discussion for the dealers. At five o'clock on the day of the dinner in each district a meeting of the employees was called to coach them on the dealer activity.

At the dinners a questionnaire was distributed covering points in the cooperative sales program such as the value of monthly summarized gas appliance sales reports, comments on the dealers' dinners, employee prospect cards, assistance of the company service department, home service representative calls, etc., and calling for general comments. A 90 per cent response was obtained. Comparative itemized dealer merchandize reports for 1934 and the first eight months of 1935 were also presented, and a tabulated comparison of sales program quotas to actual dealer sales results for the first eight months of 1935. Data sheets were distributed covering information on bank deposits of residential and commercial consumers for each district tabulated under the following headings: Total bank deposits as of September 1 for each district, number of consumers as of September 1, average bank deposits per consumer, and appliance sales per consumer for the first eight months of 1935.

According to T. E. Bartlett of the Oklahoma Natural Gas Co., the dinner meetings have built enthusiasm among the dealers and have addde 30 dealers to the cooperative activity who had formerly not taken part.

A.G.A. Laboratories Annual Inspection Program Is Under Way

Annual fall inspection program of the American Gas Association Testing Laboratories of all A.G.A. approved appliances and listed accessories for continued compliance with Association requirements is now under way. This year 226 manufacturers of domestic gas equipment in the United States and Canada will be visited.

In accordance with revised policies governing extension of Laboratory approval passed by the Executive Board of the Association in June, 1934, all appliances approved before January 1, 1931, must, on or before January 1, 1936, comply with the applicable requirements in effect January 1, 1935.

Metal Cleaning Handbook

Magnus Chemical Co., Garwood, N. J., has published "The Metal Cleaning Handbook," a 213-page book covering metal cleaning methods, equipment, solvents, cleaning materials, etc. It is amply illustrated with photographs showing apparatus, materials and methods for various metal cleaning jobs.

Rausch Santa Cruz District Manager; Henderson Heads New Department

L. C. RAUSCH was appointed Santa Cruz (Calif.) District Manager of the Coast Counties Gas & Electric Co. as of October 1, according to an announcement by President H. L. Farrar of that organization.

L. C. Rausch

Mr. Rausch succeeds Ralph Henderson, who has been manager of that district for the past two years. Mr. Henderson has been appointed manager of credits and collections for the Coast Counties Gas & Electric Co. and the Natural Gas Corp. of California.

For the past year and a half Mr. Rausch has been general sales supervisor for the two companies, headquartering in the general offices of the company at Santa Cruz. Previous to that time he was manager for the Natural Gas Corp. of Oregon, an affiliated organization, at Klamath Falls, and spent some time in the Contra Costa County properties of the Coast Counties Gas & Electric Co. He has also been connected with the Portland Gas & Coke Co. at Portland, the Natural Gas Division of the Montana Power Co., the Standard Gas Equipment Corp. at Chicago, and the Western United Gas & Electric Co. at Aurora, Ill.

The Credits and Collections Department, which will be managed by Mr. Henderson, is a new department, and has been made necessary by the rapid growth in the number of consumers served by these companies. Mr. Henderson has had considerable experience along this line, and is familiar with the entire territory served, having been in the general offices of the company for several years, previous to becoming Santa Cruz district manager.

Southern Calif. Gas Co. Building Dehydration Plant

Southern California Gas Co., at its Ventura, Calif., compressor station, is installing a calcium chloride dehydration plant that will have a daily capacity of 30 MM cu. ft. of gas at 400 pounds discharge pressure. Parkhill-Wade, Inc., Los Angeles, is making the installation for Southern California Gas Co. The plant is the first one of this type on the Pacific Coast. The installation will be completed some time in November, and a detailed description of the plant will appear in an early issue of *Western Gas.*

Worthington Folder Urges F. H. A. Terms for Industrial Purchases

Worthington Pump and Machinery Corp., Harrison, N. J., has issued a folder for general industrial distribution, which points out that the amended National Housing Act extends Federal Housing Administration financing terms to include loans for industrial purposes up to $50,000. The folder describes procedure for purchasing Worthington products under F.H.A terms.

Combustion Controls

PERFECTED TO THE NTH DEGREE FOR ALL

POWER and HEATING BOILERS

MANUFACTURED IN SIZES AND TYPES

FOR EVERY POSSIBLE REQUIREMENT

where precision controls are wanted at the price of ordinary controls.

Control the draft as well as the fires. The perfect combination, Nemec Burners and Controls. Dealers Get Busy.

Nemec Combustion Engineers, Whittier, Calif.

REFRACTORIES

GENERAL CERAMICS COMPANY

· REFRACTORIES ·

For Conversion Burners, Circulating Heaters, etc.

Because they are uniformly accurate, strong, and dependable in every way, General Ceramics Refractories are used by most of the leading manufacturers of gas heating appliances. • Our engineers will gladly cooperate with you.

General Ceramics Company, 30 Rockefeller Plaza, New York

"MODERNIZE as you repair"

THE SPRAGUE METER COMPANY

BRIDGEPORT, CONN.

Los Angeles, Calif.
Davenport, Iowa.

San Francisco, Calif.
Houston, Texas.

Welsbach HOTZONE

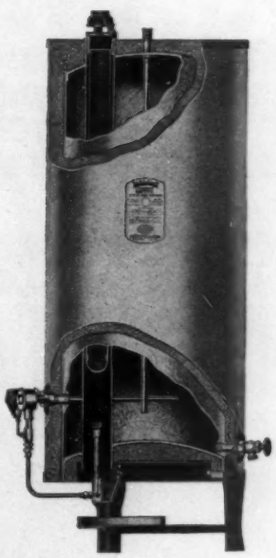
"Self-Action Storage Gas Water Heaters"

Hotzone

LOAD YOUR LINES WITH HOTZONES

More and more gas companies are using Hotzones, for they have established a reputation for high efficiency with low operating and service costs.

Recent tests on Welsbach Hotzone Special show it to be the most economical of all heaters—there is but one conclusion to draw from the results of these tests—that Hotzone is a most efficient gas heater and is the one to be used in competition with other fuels to get and hold the domestic heating load. Write for catalog.



Hotzone Special

WELSBACH COMPANY
Gloucester, N. J.
BRANCHES IN CHICAGO AND SAN FRANCISCO

Since 1887, Pioneers in the Manufacture of Gas Burning Appliances.

Southern Calif. Companies Conduct Joint Controlled Heat Drive

FROM October 21 to December 31, the three Southern California gas companies headquartering in Los Angeles are conducting a joint advertising campaign under the slogan "controlled winter comfort." Media to be used in the campaign are newspapers, featuring the "controlled winter comfort" theme, billboards, counter cards for dealers' sales floors, cards for dealers' trucks and gas bill stuffers stressing thermostatically controlled gas heating appliances. F.H.A terms will be available with a company set-up to assist dealers in arranging for financing under Title I of the F.H.A.

The purpose of the campaign is to increase the acceptance of thermostitically controlled heating appliances with the public and to center the sales efforts of dealers and manufacturers upon promotion of better appliances. A. G. A. approved unit, central, floor furnace, forced air unit and circulator equipment is being stressed. Radiant heaters and gas logs are featured as auxiliary heating equipment.

12-Year Franchise to Central Kentucky Gas at Lexington

Central Kentucky Natural Gas Co., headquartering at Lexington, Ky., has secured a 12-year franchise to serve natural gas in the city of Winchester, Ky., terminating rate litigations that began in 1927 and were recently compromised. Central Kentucky Gas Co. is a Columbia Gas & Electric Corp. subsidiary and has been marketing gas in Winchester since 1905. Conditions of the compromise call for the refunding to consumers of over $80,000 of rate impoundment money.

Constitutionality of Holding Co. Bill Is Challenged

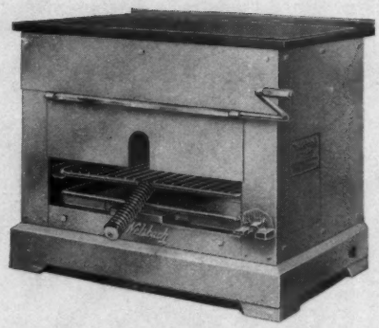
Petition was filed on October 23 in the United States District Court at Wilmington, Del., challenging the constitutionality of the Federal Public Utility Holding Company Act, by trustees of the Central West Public Service Corp. The company, headquartering at Omaha, Neb., is seeking to reorganize under the National Bankruptcy Act. The court is asked in the petition to pass on the constitutionality of the act, and if it is found unconstitutional, to issue an injunction prohibiting the corporation from registering with the Securities Exchange Commission as required by the legislation.

Natural Gas for Deaver, Wyo.

Frannie Gas Co., Frannie, Wyo., owned by V. M. Kirk and Son, has been granted a 25-year contract to supply natural gas to Deaver, Wyo., and has begun construction of the distribution system.

The Big Name in
HEATING
and AIR
CONDITIONING
is
MUELLER-MILWAUKEE

Western Gas
is compressed by
COOPER-BESSEMERS
50 to 1600 horsepower
THE COOPER-BESSEMER CORPORATION
640 East 61st St. Los Angeles, Calif.
PLANTS: Mt. Vernon, Ohio — Grove City, Pa.



Welsbach Announces Small Size Broiler Griddle

Welsbach Co. has added to its line a small broiler griddle for use in drug stores and lunch rooms where space is limited. This model is equipped with the Welsbach radiant broiler burner; the gas cock settings permit a close temperature control without a thermostat. The front, back and sides are of stainless steel.

Byllesby Engineering and Management Corp. Board of Directors Elected

AT a meeting of the stockholders of Byllesby Engineering and Management Corp. October 8, the following persons were elected to the board of directors of the corporation: J. F. Owens, president of Oklahoma Gas and Electric Co.; Frank R. Phillips, president of the Philadelphia Co. (Pittsburgh); Robert F. Pack, president of Northern States Power Co.; T. B. Wilson, president of Louisville Gas and Electric Co.; J. P. Pulliam, president of Wisconsin Public Service Corp.; W. F. Raber, president of San Diego Consolidated Gas and Electric Co.; C. M. Brewer, president of Mountain States Power Co. and The California Oregon Power Co.; and W. N. Clark, president of Southern Colorado Power Co.

The new members elected to the board, and constituting a majority thereof, are the executive officers in direct charge of these respective operating companies.

This action follows the sale, as announced in the October issue of *Western Gas,* by Standard Gas and Electric Co., to operating companies in its system, of the stock ot Byllesby Engineering and Management Corp., all of which had heretofore been owned by Standard Gas and Electric Co.

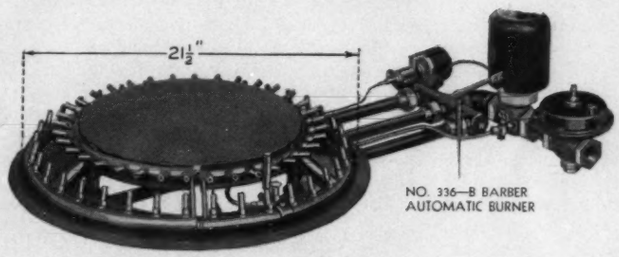
A committee was appointed following the election of the new members of the board to study the organization and functions of the management corporation, particularly insofar as the functions of the corporation may come under the provisions of the Federal Public Utility Act of 1935. At a later meeting of the board the committee will also present such recommendations as they decide upon with a view to closer integration between the management corporation and the operating companies.

Added Supply for Oklahoma City

Oklahoma Natural Gas Co. is laying 6 miles of 8-inch pipe from the Edmond oil fields to Oklahoma City, Okla., to augment the city's natural gas supply.

Over 17 Years' Success —that's the Story of

BARBER BURNERS



NO. 336—B BARBER AUTOMATIC BURNER

A RECORD of over 17 years is behind every single Barber Automatic Conversion Burner. With both Gas Companies and the Heating Trade, the name "Barber" stands for RELIABILITY and RESPONSIBILITY. Barber Burners save "sick" jobs and removals, and reduce servicing to the absolute minimum. That is why Barber is the SAFE Burner to sell on the time payment plan.

●

Each individual Barber Conversion Burner is SPECIFICALLY ADAPTED to the heating system in which it is used. Eight different sizes to accommodate round grate diameters from 12 in. to 34 in. Also "tailor-made" to SUIT and FIT grate dimensions of oblong furnaces and boilers, and insure a "scrubbing" flame action against side walls of fire box, at the proper level, with 1900° Fahrenheit flame temperature.

No fire brick or refractory elements to bother with and replace—Barber Automatic Burners require only 70% of the installation time of burners using such elements. Equipped with Klixon or Baltimore Safety Pilot for positive and accurate control. Listed in the A. G. A. Directory of Approved Appliances.

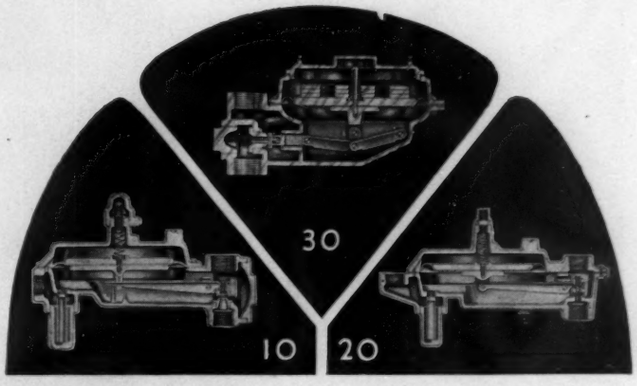
We supply Sales Literature, Specification Data Sheets and Practical Sales Assistance. Write at once for latest Illustrated Catalog and Revised Price List.

THE BARBER GAS BURNER COMPANY
3704 Superior Ave. Cleveland, Ohio

BARBER *Automatic* JET GAS **BURNERS**

for Warm Air Furnaces, Steam and Hot Water Boilers and Numerous Other Heating Appliances.

●



Accurate Control

With parts so precisely machined for each model that they are completely interchangeable on one or one hundred Reynolds regulators—the accuracy you demand in performance is assured.

Reynolds service regulators, Models 10, 20 and 30, are built to meet specific requirements—years of operation in the field through a complete range of operating conditions have proved their superiority.

Reynolds engineers gladly co-operate with you in working out gas problems. Write for details.

Reynolds Branch Offices:
421 Dwight Bldg.
Kansas City, Mo.
2nd Unit, Santa Fe Bldg.
Dallas, Texas

Representatives:
Eastern Appliance Co.
Boston, Mass.
F. E. Newberry
Avon, New Jersey
G. H. Unkefer
428 Boyd St.
Los Angeles, Calif.

MODEL 10—*Dead Weight or Spring Type,* with or without Mercury Seal, or Dead Weight Safety Seal. All working parts are so accessible as to be interchangeable without removal from pipe line.

MODEL 20—*Dead Weight or Spring Type,* with or without Mercury Seal, or Dead Weight Safety Seal. All working parts are so accurate as to permit complete interchangeability in shop.

MODEL 30—*For horizontal or vertical connections,* with or without removable valve pocket. Available with either Spring or Dead Weight adjustment. With or without Mercury or Dead Weight Safety Seal.

REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA, U. S. A.

GAS CONTROL SINCE 1892

NO-OX-ID-IZED Wrapper withstands soil stresses.

TIME TELLS

Coatings are judged today by the amount of protection really given the pipe surface. The real value of a coating is gauged by the absence or presence of deep pitting.

Twelve years added to the normal life of 6 years making a total of 18 years of service means ECONOMY. NO-OX-ID did it and there are many other examples equally convincing.

Recommendations and estimates supplied.

NO-OX-ID IRON-OX RUST - The Original Rust Preventive

Los Angeles:
807 Mateo Street
Phone TRinity 3385

San Francisco:
421 Bryant St.
Phone SUtter 8688

Soboba
MINERAL HOT SPRINGS

REST, play and enjoy life at Soboba. Every facility for your comfort and convenience. • 89 miles--paved, no grades--from Los Angeles. • Unexcelled curative mineral waters. • Riding, golf, swimming and hiking. • Excellent cuisine with moderate prices. • European plan from $1.50 to $4.50. Write for booklet to

JOHN G ALTHOUSE, *Owner and Manager*

SAN JACINTO
California

Unit Costs in Utility Valuation Work

(Continued from Page 14)

$100,000,000, the difference becomes appalling and the loss, if it is a loss, runs into real money.

Returning to the plant in the small town and eliminating material, we find labor on main construction only for which the company actually paid approximately $9000 is valued by the commission's engineers at $5,450—or 60.6 per cent of its cost.

Both engineers used unit costs for labor. But they did not arrive at the same destination.

Who was wrong? Which one saw the situation as it was, and which one was drawing on his imagination?

It seems to me that what it costs to build a pipe line or a gas distribution system should be a pretty well established fact, and not a matter of pure conjecture or guess.

Having been faced repeatedly with experts giving opinions as to values which we knew to be wrong, and being about to construct distribution systems in 58 towns which had not previously had gas, our company went to the trouble and expense to place engineers on the work whose sole function was to make studies and keep accurate records as to actual labor performance, for the purpose of developing unit costs to be used in valuation and other work.

These costs when developed were then checked by estimating the work actually done by the use of such unit costs. Invariably they checked. Their accuracy was proven with the same conclusiveness as is any mathematical problem.

This testimony was corroborated, in the case to which I refer, by similar time studies made by the Lone Star organization. These studies independently made checked in such manner that each proved the accuracy of the other. The matter is one that is subject to definite proof. Unit costs for labor, with slight variation due to local conditions, should be practically the same the country over.

Is there not, then, some way in which some standard can be established which will be recognized by the engineering profession and which a reputable engineer will not dare disregard? The amount involved is large where a large utility is involved. In our case of the small town, the commission's engineer's valuation on labor would have to be increased 55.53 per cent to equal the actual cost. The question is, therefore, as to what can be done to protect and save from confiscation 55.53 per cent of a utility's investment in labor in cases similar to this.

I feel that in the recent proceedings to which I have referred, our testimony as to unit costs was greatly strengthened by the time studies made by the Lone Star organization. Had I then known of similar studies made by other companies, I would have tried to procure witnesses from them to present their findings. While in many instances it is not advisable to take up the time of a court or commission with merely cumulative testimony, this is an instance where I believe the real facts as to labor performance in the construction of pipe line and distribution systems could be made so impressive by the presentation of a large number of time studies made by a large number of companies, each acting independently of the others, that no court would dare disregard the facts so established by actual experience and follow blindly the theoretical opinion of some employed engineer who never himself constructed a distribution system.

In my judgment it follows that the more of us who have the opportunity to make such time studies in connection with new construction work should do so. I think there should also be some medium provided for each to make its findings available to others. If these studies independently made are checked by a neutral body and found to correspond, it should appear to anyone that the composite of these studies represented a fact and not an opinion.

The first step of course is to bring about an appreciation by our several members of the usefulness of such knowledge, not only to themselves, but to the industry. Time studies made on the ground by trained engineers with no other duties offer, to my mind, the method leading to most accurate results. The other alternative is the adoption of an accounting system which will disclose the cost of various performances. I am not an accountant, but I have been told that the system approved by the National Association of Railway and Public Utility Commissioners, if rigidly followed, will give the desired information.

It may seem a strange comment, but from testimony I have heard, I believe few companies and few contractors have definite knowledge of what their several operations cost. They can approximate the total, but as to how that total is made up, they are woefully ignorant. This ignorance permits engineers, whose efforts are pointed toward a desired conclusion, to justify such conclusion. Why not make these facts a matter of record—a matter of such unimpeachable record as cannot be the subject of question by adversaries.

How many companies represented here have accurate records as to how many cubic yards of earth one man can excavate in an hour—not an exhibition hour—but day in and day out in the construction of a distribution system? And the question is not only that, but in addition, how many cubic yards does he actually average per hour in such work? Commissions' engineers seem always to imagine an ideal situation. Work is never held up by other work, or interfered with by irate citizens; tools never have to be sharpened; the weather is always perfect. If such an engineer says a man can excavate 5 cubic yards an hour, what record have you to prove that in actual construction work no such perfection is ever attained? The fact that some men can run a hundred yards in 10 seconds does not mean that any man can run a mile at the same speed. But if an engineer says 5 cubic yards is proper and computes your total man hours on that basis, what have you in your records to controvert it?

And the same is true as to backfill.

And the same is true as to rock excavation; and, in fact, to every act a laborer performs.

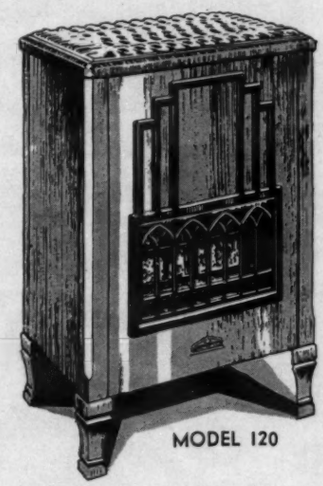
I would not be so earnest about this matter had I not repeatedly chafed under my

A NEW

Cheery Radiant Heat

(RADIANT - CIRCULATOR)

GAS HEATER



MODEL 120

Wedgewood's NEW 1936 Radiant Circulator Gas Heater provides a simple, inexpensive solution for heating problems.

It is actually two-in-one; a radiant as well as a circulator heater. The visible radiant flames add cheer and create a zone of extra warmth and comfort immediately in front of the heater, while the circulator ends cold drafty floors and circulates heat into adjoining rooms. Greater internal heating areas provide exceptional efficiency and rapidity of heat circulation.

•

Distinctively styled with choice of two handsome, durable finishes — a full porcelain Walnut and a modern Crystoline exterior.

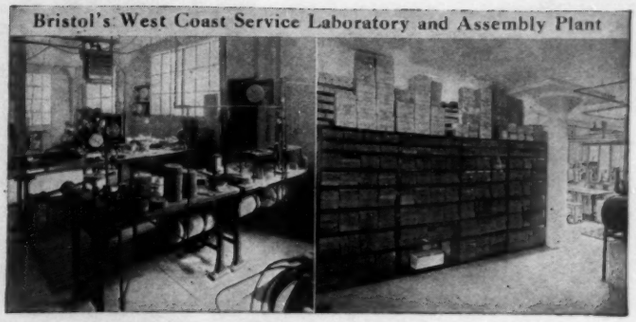
NEW BEAUTY AND STYLE • UNUSUAL GAS ECONOMY • EASY TO INSTALL • LOW FIRST COST • CHEERFUL RADIANT FLAMES • QUICKLY HEATS MANY ROOMS WITH CIRCULATED HEAT • CLEAN, NO SOOT, ASHES OR FIRES TO KINDLE AND FEED • UNSURPASSED WEDGEWOOD CONSTRUCTION.

•

James Graham Mfg. Co.
San Francisco, Los Angeles
Newark, California
Portland, Oregon

WEDGEWOOD

Bristol's West Coast Service Laboratory and Assembly Plant



Build New Life *plus automatic control*

INTO YOUR OLD RECORDERS

Perhaps you, too, have a number of Bristol's Recorders that have given fine service for many years. If so, don't think of throwing them away. They're still good as gold,—worth real money to you.

Reconditioning will give them new life. Better yet, modernization into recorder controllers will enable them automatically to control your temperatures or other process conditions within the closest tolerances and make possible exactingly uniform product quality.

Having the work done here by Bristol's West Coast Service Laboratory and Assembly Plant instead of thousands of miles away will save both time and money. Write.

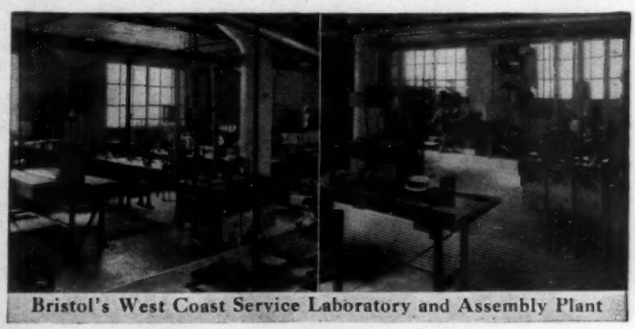
THE BRISTOL COMPANY

Branch Offices: Rialto Bldg., San Francisco . . 747 Warehouse Street, Los Angeles . . Branch Factory: 311 Minna Street, San Francisco

BRISTOL'S

TRADE MARK REG. U. S. PAT. OFF.

PIONEERS IN PROCESS CONTROL SINCE 1889



Bristol's West Coast Service Laboratory and Assembly Plant

Controlled Winter Comfort

with WARD Floor Furnaces

Only WARD with its three exclusive floor furnace features can make "Controlled Winter Comfort" possible: 1. Bilt-In Thermo-Control, the most accurate thermostat ever developed for floor furnaces, keeps the home always just right . . . never too hot, never too cold. 2. Cradle Circulation . . . the WARD system of circulation that increases heating efficiency as much as 20%. 3. Automatic Pilot . . . an extremely sensitive pilot that shuts off the main intake immediately should gas pressure fail.

Your load is as good as the appliance you sell . . . when you sell WARD Floor Furnaces, you sell the best.

For further heating facts write

WARD HEATER CO.
1800 W. Washington
Los Angeles, Calif.

MAKE YOUR Chicago VISIT A Real Pleasure

Stay where successful men and women stay—on Michigan Avenue at the Auditorium Hotel where the gallant hospitality of the past meets the modernity of today. Enjoy the fine food,—the large spacious rooms and the convenience of its "edge of the Loop" location.

AUDITORIUM HOTEL
MICHIGAN AVENUE AT CONGRESS STREET
GEO. H. MINK Manager

RATES
WITH PRIVATE BATH $2.50
WITHOUT PRIVATE BATH $1.50

impotence to overcome opinions I knew to be unfounded and wrong. An engineer under cross examination replies, "That is the result of my experience." He says he has been in business 10, 15, 25 or perhaps 50 years. That statement is impressive and it makes a false conclusion, likewise impressive. Experience is the remembrance of facts developed by actual work. Few engineers employed by commissions have actually done such work. They have the habit of confusing their memory with their imagination. The result may not be planned or dishonest, but it is none the less damaging.

What I have said with regard to man hours of labor applies with equal force to structural overheads. We all know they exist, and pay dearly because of their reality. But to a layman court or commission they do not have even the reality of a man hour of labor. By virtue of their indefiniteness they appear to the layman unreal, uncertain and sometimes, I'm afraid, as a clever device to pad a valuation.

As an example, in the case to which I have referred, time studies on actual work showed miscellaneous construction expense to constitute 17.65 per cent of the total labor cost. The commission's engineer made no allowance whatever for this item and insisted that none should be made. While 17.65 per cent of one dollar isn't much, 17.65 per cent of a million dollars is a lot of money, at least to a lawyer like me.

In this case time studies showed that the actual cost of supervision and inspection was 9.7 per cent of total labor cost. The Commission's engineer allowed 1.5 per cent.

Time studies showed that the cost of tools and supplies was 7.99 per cent of the total labor cost. The commission's engineer allowed 1.0 per cent.

These instances are sufficient for illustration, although there are many other similar items.

It has become so commonplace for engineers for commissions and utilities to differ that little is usually said. But where engineers differ as I have herein outlined, it seems to me it is high time for some one to say something.

How can the truth be made a matter of unimpeachable record for use in all rate cases where valuations are made on the reproduction cost basis? Is there not something that can and should be done?

I had thought of suggesting the appointment of a committee of this body continuing from year to year for the purpose of receiving time studies made by the industry in new construction work. Such committee could check such studies, compare them, adjust them to varying conditions, and it seems to me, arrive at a composite which could be established as a standard and its recognition compelled. The trouble with that, of course, is that it would be viewed in the light of a self-serving declaration. The fact that an association of the industry put out the information might lessen its weight or give an excuse for its rejection.

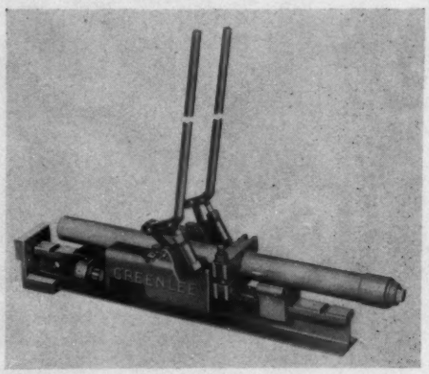
The reports and bulletins of government agencies, such as the Bureau of Mines, or Standards, carry great weight and are frequently used in legal proceedings. Their weight is due to the fact that they issue from a non-partisan source. In view of recent events, it would be rather hard to imagine the federal government doing anything that could possibly be of benefit to utilities, but perhaps the politicians have not yet invaded all its branches. A committee of this body might make an investigation to determine whether any federal bureau would be interested in making such a study. If so, such committee could cooperate with the bureau and bring to its attention studies heretofore made and sources of future information.

These are merely suggestions that occur to me. There may be and probably are better ways to achieve the desired results.

Greenlee Tool Co. Produces Hydraulic Pipe Pusher

GREENLEE TOOL CO., Rockford, Ill., has introduced a hydraulic pipe pusher for underground pipe installation that can be operated by one man. It has eight speeds available for varying soil conditions which give pressures against the pipe clamp ranging from 6,500 pounds to 40,000 pounds.

Pipe clamps need to be changed only every 4 to 7 feet, depending on the length



of rail used. Notches are cut in the rail on 4-inch centers to receive a pawl on the end of the pistons and one on the body of the pusher. When the pipe has been pushed forward 4 inches, the pawl on the body drops into a notch to hold it while the pressure is released by depressing both handles. Springs within the body then return the pistons to the starting position. The operation is repeated until the end of the rail is reached, when it is necessary to push the machine to the opposite end and reset the pipe clamp.

This pusher has capacity for 3-inch and smaller pipe and weighs 150 pounds without the rail. It is furnished with five clamps from 1¼- to 3-inch diameter.

"Heart of Home" Sound Film Draws Large Attendance

"The Heart of the Home," sound film of The Peoples Gas Light & Coke Co., featuring the modern gas range, had been shown before 76 organizations up to October 7. Total attendance of 10,149 women included church groups, Order of the Eastern Star, Parent Teacher Associations, women's clubs, and miscellaneous showings. This total number does not include the people seeing the film at the Century of Progress.

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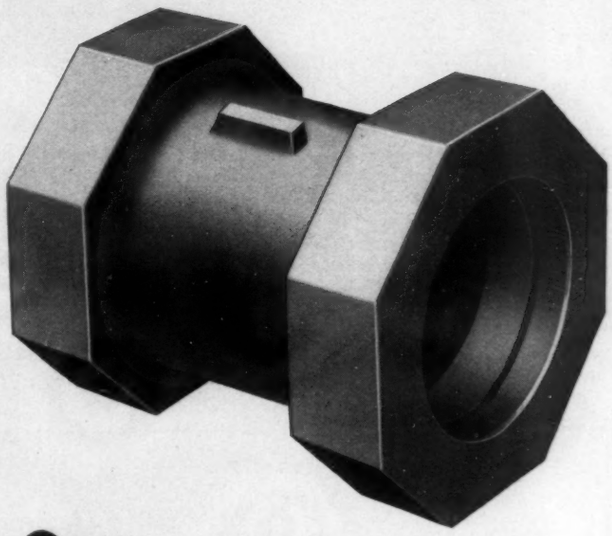

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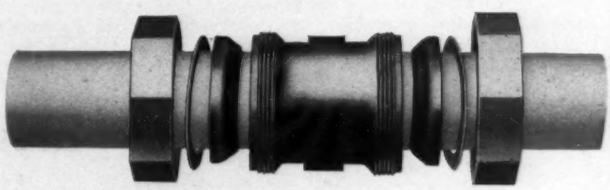

THE NATIONAL-SUPERIOR CO.
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Dayton, Ohio

Cleveland Co-Operative Announces "Grandaire"

THE Gill-designed Grandaire, forced air type of automatic gas-fired heating unit, is announced by The Cleveland Co-Operative Stove Co.

The Grandaire combines the features of forced air circulation, humidification, air filtration and heating. The air is filtered, humidified, forced through the heating element by a fan and directed into the room in a horizontal stream through adjustable louvers, and has an hourly input of 50,000 B.t.u. and normal output of 41,500 B.t.u.

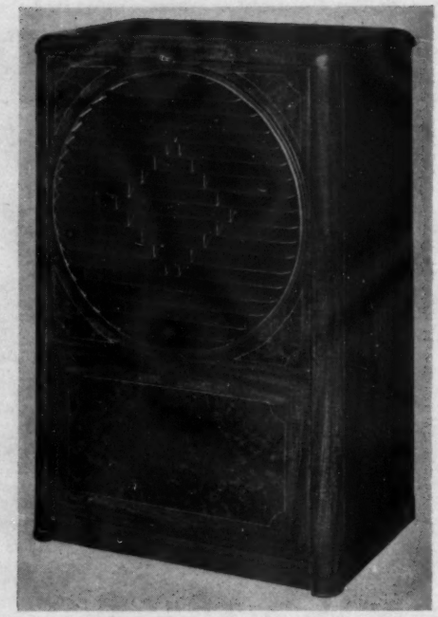
The entire action of Grandaire is automatic. A Barber gas pressure regulator on the main supply line compensates for variation in line pressure. The orifices are of the fixed type. Grandaire is built in one size only, and may be furnished for natural, manufactured or mixed gas.

The burner is made of cast iron with slotted ports, reducing the noise of combustion and preventing back-flash in the mixing tube. The burner is located in the cast iron firebox and is divided into three sections with two mixing tubes, two orifices and four burner heads to each section. The manifold supplying the gas to the burner is partitioned so that the center portion supplies gas to the two outside sections of the burner. Grandaire uses a safety pilot valve which is placed in the main gas supply line with a constant burning pilot in a position so as to light the center portion of the burner first, which, in turn, ignites the end sections of the burner. In case of gas failure, the valve closes within two minutes.

When in operation, the center section of the burner is always ignited. The two end sections of the burner are controlled by a magnetic gas valve, operated by a room thermostat. The action of the magnetic valve is synchronized with the multi-speed fan so that the room thermostat opens the valve allowing gas to flow into the end burners and at the same time increasing the speed of the fan. When the thermostat closes the valve, it also reduces the speed of the fan. This leaves the center part of the burner on with one-third of the total rating of the entire burner. Under these conditions the fan operates at minimum speed. The fan is a shaded pole type of 1/40 h.p. In case of fan failure, a safety fuse shuts off the magnetic gas valve which extinguishes the two end sections of the burner, preventing overheating of the cabinet.

The burner box is made from one-piece cast iron with 13 patented Venturi-type heating tubes. The radiating element consists of 32 Venturi-type aluminum tubes. The aluminum radiator is fastened to the cast iron firebox by bolts, the joint being sealed with asbestos cement. Thus, the burner box and radiator become a single unit.

The heat and flue gases from the burner pass up through the firebox and aluminum radiator around the Venturi tubes, the flue gases reaching the tubes at a temperature of about 320° F. The air which is to be heated passes through a filter made of fireproof fabric, and is forced through a controlled humidifier by the action of the fan. A manually controlled shutter regulates the humidity to the desired degree. The air is then forced through the Venturi tubes, asborbs the heat and leaves the front of the heater through the directional louvers. A manual gas valve is provided so that the gas may be shut off in the summer and the fan operated alone for ventilation.



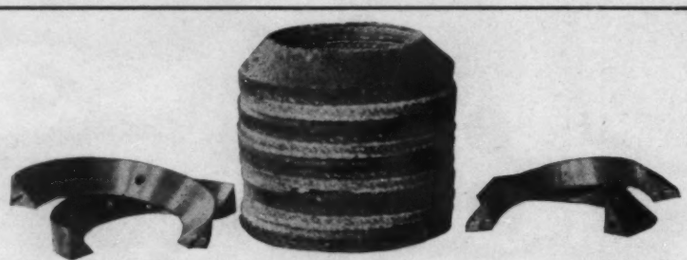
The Grandaire heating unit.

The entire mechanism is in an attractive cabinet made of 20-gauge sheet metal with the new patented Di-Noc finish. The cabinet is of modern design, constructed with rounded corners. A single Grandaire will heat approximately 10,000 cu. ft. of space under normal conditions. This is equivalent to 173 square feet of steam radiation, or 277 square feet of hot water radiation. The output of the unit as rated by the A.G.A. testing laboratory is 40,000 B.t.u. maximum. However, the Grandaire unit may be throttled down to a minimum of 10,000 B.t.u.

Grandaire is being launched simultaneously with the Cleveland Co-Operative Stove Co.'s 69th anniversary.

Los Angeles G. and E. Completes Appliance Testing Laboratory

Los Angeles Gas and Electric Corp. in October completed setting up a fully equipped appliance testing laboratory at its Center and Ramirez Sts., Los Angeles, gas works. General testing of all types of domestic gas appliances will be conducted in the new laboratory with the purpose of forstalling field service complaints and of cooperating with manufacturers and dealers concerning minor changes, adjustments and redesign. The L. A. G. and E. laboratory will function to supplement the work of the A.G.A. Testing Laboratories, no conflict in services being involved.



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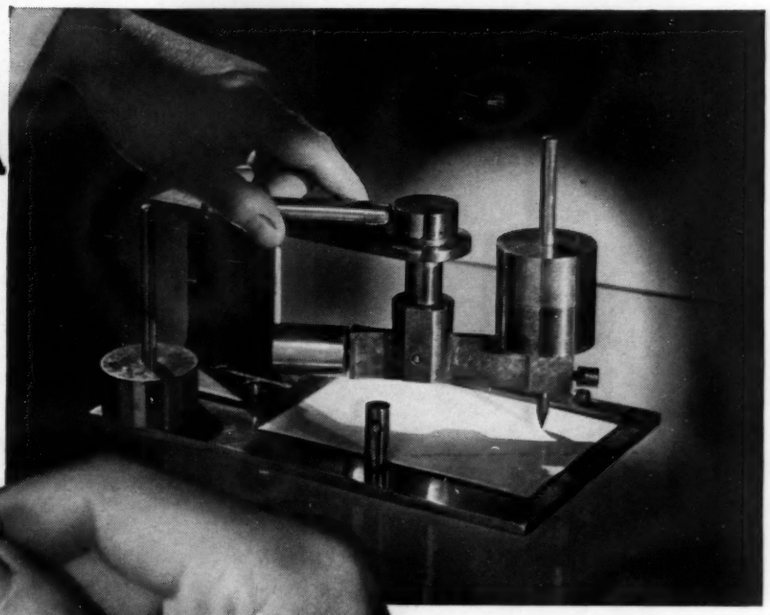

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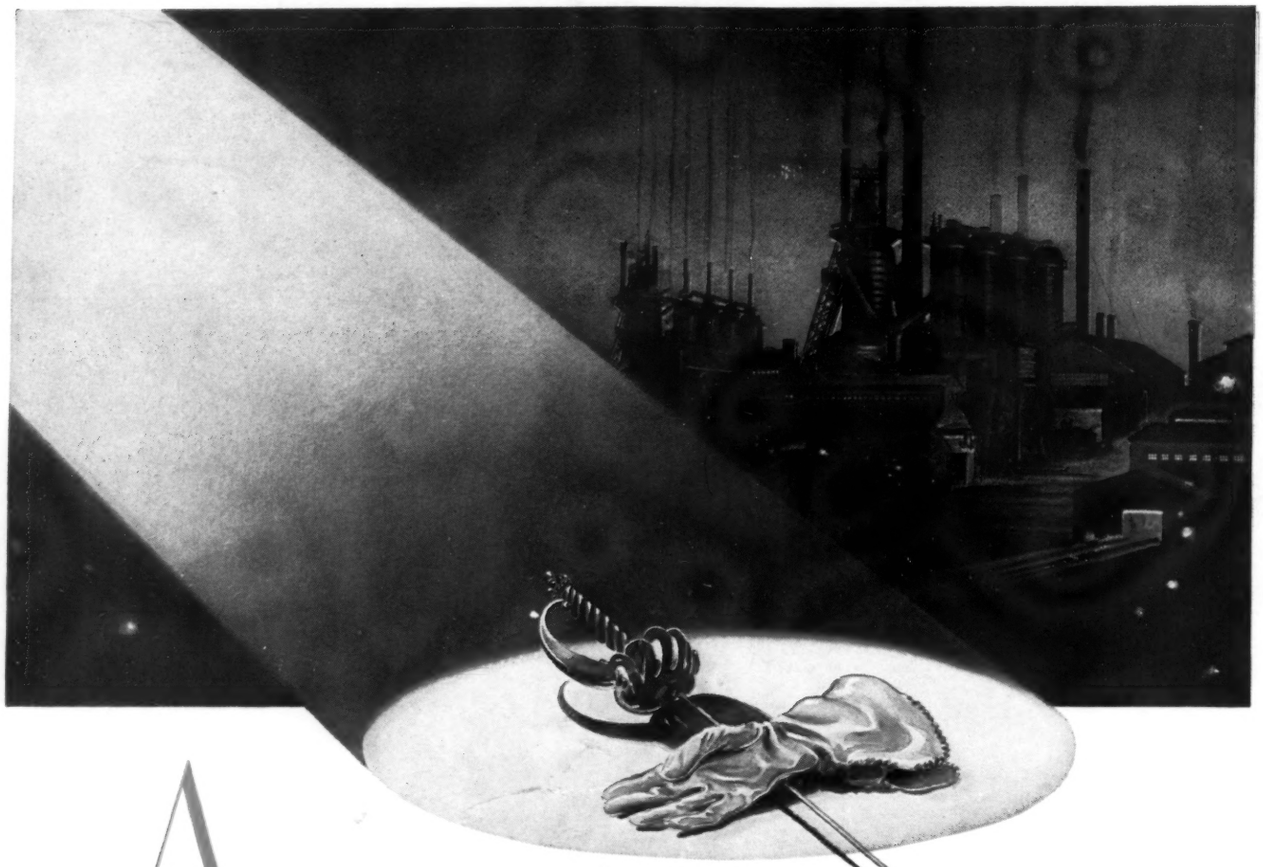

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